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PAIN AND THE MECHANISM OF ITS PRODUCTION*

BY

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You might anticipate that my task as an anatomist in opening this discussion would be to describe the structures concerned in pain production, the distribution and the connexions of the nerve apparatus, and to present to you a more or less finished picture of the anatomy of the appropriate parts of the nervous system, leaving you to discuss the bearing of what I might say on the clinical manifestations with which you are all so familiar. That method of approach to the subject would be a stereotyped one, but in the present instance it is inapplicable. Let us try another method, first seeing where we stand and what exactly we want to know about pain; then we can approach the problems from the experimental side, discuss the results of these experiments, and see where they lead and what the next step is to be.

Pain is the most important of complaints, and the commonest and most clamant symptom with which the physician and surgeon have to deal. It drives the patient to his doctor, whose most urgent task is often its relief, while the search for its cause provides some of the most difficult problems he has to face. On the clinical side volumes have been written about it; I need only mention the classical work of John Hilton, and the monumental works of Behan and Pottinger. The current literature dealing with it is enormous; there is hardly a single number of the recent issues of the *Journal of the American Medical Association* in which there is not a reference to, or abstract of a paper dealing with, some aspect of the subject or recording observations upon it. Interest in pain is not confined to the medical world; philosophers and ecclesiastics have pondered over it, and the problem of pain has raised issues of deep significance in philosophy and theology.

Much of the discussion about pain has dealt with its "protective" aspect, but I do not think that any good purpose is served by philosophizing about this aspect of the question. Pain in some instances serves a useful purpose by warning against agencies to be avoided, or by deterring the sufferer from attempting physical exertion which would be harmful to the condition underlying his pain; but this principle is not a universal one. Pain is not always "protective," nor does it invariably arise when harmful agencies are at work, and pathological changes are going on. A burnt child may dread the fire, but the sufferer from renal colic is warned by his pain neither what to avoid nor what to do to ease it; and pathological changes may take place in the body, such as those which convert a pliable artery into a rigid pipe-stem, without a hint of pain being given.

The definition of pain is also an unprofitable subject of discussion. Like other forms of sensation it can be defined only in terms of itself. Visual phenomena can be described only in terms of sight, and are unappreciable by one who has never seen. We have all experienced pain and know what it is like; we can say of it only that it is painful and immediately recognizable whenever it occurs. It is different from a mere unpleasantness of sensation, which is a "tone" that may accompany other sensations, just as may its opposite, pleasantness or agreeableness.

Our first task must be to discover the mechanism of its production if we are to solve any of the later questions which arise. We cannot, for example, understand the action of anaesthetics or of any means employed to relieve pain unless we know it. Pain is so varied in its forms, and arises apparently from so many different causes, that at first sight it might appear almost hopeless to discover the underlying mechanism and the processes that are at work, and still more difficult and improbable that any common cause operating in all cases will be discovered. The search will be a prolonged and difficult one.

Mechanism of Pain Production

The study of the mechanism of pain production is a problem in which anatomy and physiology can take a part, leaving clinicians to determine the diagnostic value and the prognostic significance of its occurrence. At this age of physiological research, when so many secrets of the action of the nervous system have been discovered, it may seem strange that we still have to discover the mechanism of pain production, but this is indeed the case. We do not know what are its nerves, or, indeed, whether it has its own nerves or not, nor whether the "centre" is in the thalamus, if there is a "centre"; nor do we precisely know the pathways for its impulses within the central nervous system. The reason for this ignorance is doubtless due largely to the impossibility of carrying out such physiological experiments as can be employed for other forms of nerve activity. The existence of pain can be recognized only in a sentient animal, and man himself must undergo experiment.

Another reason why pain is not better understood is found in the failure to recognize in it a definite form of sensation, with its own nerve apparatus. In many people's minds there is present the idea that pain is peculiar and unlike other sensations: that it is merely a manifestation of some sort of increased or disordered activity of any sensory nerves, and that, for example, it may arise from "over-stimulation" of these nerves. There is also the idea that this form of sensation can arise

* The opening paper of the discussion on "Pain," held in the Section of Neurology, Psychological Medicine, and Mental Diseases at the Annual Meeting of the British Medical Association, Bournemouth, 1934. [By inadvertence a contribution to this discussion appeared in the *British Medical Journal* of November 17th before the opening paper had been published.]

in consciousness independently of the afferent impulses which are its ordinary cause ; that there is what is termed, as I understand it, " psychogenic pain."

All recent work on sensory physiology is opposed to the former of these ideas. It has been shown that variations in the stimulus applied to afferent nerves alter the number of impulses which are transmitted by them, and increase or diminish the intensity of the sensation, but there is no alteration in its quality. Division of the optic nerve may excite some visual sensation, but it does not cause pain, and the cutaneous nerves of the epidermis, the nerves, as I believe, of tactile sense, can also be divided without the production of pain. With these examples before us it is difficult to imagine that pain is ever due to impulses along nerves of other forms of sensation.

Pain is often, but not invariably, accompanied by other symptoms such as pallor, fainting, and sweating, and these are sometimes ascribed to the pain. They are not, however, invariable concomitants of pain, and hence we must conclude that they are produced in a different way, by other afferent impulses than those which cause pain, travelling by a different path and producing their effects often by exciting the sympathetic system. These concomitants fall into Mackenzie's group of " associated phenomena."

Different Pain Response from Different Tissues

The mechanism of pain production may be studied in two successive steps: the first is to determine the tissues and organs that can give rise to pain, and the second, the effective stimulus in each of them for its production.

It is a well-recognized fact that different parts of the body are entirely different in their pain responses. I remember well a case of enormous prolapsus of the rectum which came under my care during the war, and the difference in the sensory responses which could be elicited from its surface. The prick of a pin near the margin of the anal orifice was painful, but whenever one passed beyond a definite line and stuck the pin into the mucous membrane higher up no pain whatsoever was elicited. This afforded a simple but dramatic illustration of " visceral insensibility," or, in other words, that stimuli which are effective or adequate for pain in some tissues, which we may call the " somatic," produce no sensation from the " viscera." We know that the alimentary canal is so insensitive to such stimuli that the intestine may be cut or pierced or even burned without any pain resulting.

We have not as yet equally precise and well-established information about other viscera, but there is evidence to show that the lungs, the heart, and the brain itself show the same sort of " insensitivity," in that pain is not produced from them by mechanical stimulation such as that described, though it may originate from other causes. This is a field of study in which clinical observation on the sensitivity of exposed organs will in time provide the necessary data. The problem of visceral pain presents special features, and my own view is that its mechanism will not be understood until we know more about " somatic " pain—namely, the mechanism of its production from the tissues and organs of the body wall and limbs.

Experimental Mechanical Stimulation of Different Tissues

The experiments which I have carried out in work on the first of these problems have been published, and I need only summarize the results. They were devised to test whether pain could be produced by direct mechanical stimulation of different tissues. The stimulus used was a sharp needle, the point of which was passed through the skin and onwards into different tissues, muscle, fibrous tissue, periosteum, and also into the walls of veins and arteries. These experiments showed that among " somatic " tissues there are great differences in the responses elicited by stimulation in this way.

Epidermis has its own nerves, but pain does not arise from them, even when they are divided. The dermis gives an immediate and acute response, as everyone knows, to a wide variety of mechanical stimuli. The subcutaneous tissue is less responsive. For the greater part it does not give a pain response to mechanical stimulation. We all know that the introduction of a hypodermic needle is painless once the skin has been penetrated. The subsequent injection may, however, cause acute pain, and evidently in subcutaneous tissue there is a pain mechanism. Fibrous tissues are responsive to direct mechanical stimulation. Acute pain is caused by the passage of a needle through the fibrous aponeurosis of muscles.

The walls of veins are almost entirely insensitive or give but slight response. This is my experience, but some who have observed the results in a similar experiment have found that considerable pain was produced. One observer told me that in himself he found pain produced almost as severe as that which I have described from arteries. Arteries give a very acute response: the pain is immediate, severe, and sickening, and tends to radiate along the course of the vessel. In my own observation, the wall of my brachial artery was penetrated, and I have received confirmation of my observations from those who, in their clinical work, have had occasion to open an artery.

Ordinary striated tissue gave practically no pain response to mechanical stimulation ; the sensation elicited was dull, felt like pressure, and was unpleasant, but not as a rule definitely painful. Periosteum may give a pain response, but often does not, and bone is definitely insensitive to this kind of mechanical stimulation. To strip periosteum from bone, however, is definitely painful.

The value of these observations lies in the demonstration they afford that the somatic tissues do not all give a pain response to mechanical stimulation, while we know also that severe pain can be produced even from those insensitive to mechanical stimulation, by the operation of other causes. The case of muscle is specially instructive. Severe pain can be produced from muscles which contract if they have not a proper blood supply, and Sir T. Lewis has provided the important discovery that the pain is due to the production locally of a chemical stimulus, which he terms the " p substance." There are reasons which lead one to suspect that a chemical agent may be the stimulus for pain in certain other tissues and perhaps in all of them. Pain, for example, is seldom momentary ; it persists for a shorter or longer time after the exciting stimulus has ceased to act, and this can be due only to the continued operation of a local cause.

Pain and Hyperalgesia

The condition of hyperalgesia throws some light upon the mechanism of pain production. Hyperalgesia shows itself by the occurrence of a pain response to a mild form of " stimulation," such as usually, and in the normal condition, fails to cause any pain. Illustrations of this are numerous, and among those with which we are familiar are the tender scalp which is present in neuralgia, and the subcutaneous and the muscular hyperalgesia found in visceral abdominal disease and in angina pectoris, when pressure on a fold of skin or on muscle produces an acute pain.

The same sort of hyperalgesia may be produced by local causes. If, for example, the skin be reddened by the application of a mustard leaf, the affected area is hyper-

aesthetic to warmth, or hyperalgesic, for exposure of the surface to even a mild degree of warmth causes severe pain. Lewis has recently shown that if the skin be injured in a variety of ways a local condition which he terms "susceptibility" follows, in which stimuli usually painless cause pain from the affected area. He has ascribed this to the local production of a chemical substance, which raises the excitability of the terminals of the pain nerves. These facts throw a very important light upon the mechanism of the production of pain, showing as they do again that a chemical factor may be the agent.

"Referred" or "Heterotopic" Pain

While pain is often localized to an area at or near the site of its cause, there is also the large group of instances in which pain is, as it is termed, "referred," as in many forms of visceral disease. Examples of this are innumerable, but one may mention particularly the pain of angina referred to the arm, shoulder pain in liver and diaphragmatic disease, and the headaches which arise from defective ocular accommodation. In this group we should, I suppose, include the labour pains of childbirth, which are referred to regions remote from the uterus. The term "referred pain" for these forms of pain is not to my mind a good one, and its use has led to misconceptions. All pain is "referred" by the sufferer to some place; the point of distinction between the two kinds of pain is that in some forms the pain is referred or localized by the sufferer to the place where the disordered process is at work, while in the others it is referred to some distant region. The distinction between the two types is of importance, and for the former I would suggest that the word "homotopic" be used, while for the latter in contrast we might apply the term "heterotopic." An advantage found in these terms is that they provide a contrast, whereas to "referred" pain there is no suitable contrasting term.

The means of the production of "heterotopic" pain is yet uncertain. Mackenzie's provisional theory of its production, his "viscero-sensory reflex," postulated that an "irritable focus" was produced in the spinal cord by afferent impulses from the viscera, and that this focus was in some way responsible for the transformation of the ordinary impulses of touch and pressure in cerebro-spinal nerves of that segment into impulses which gave rise to pain. The facts at least are clear—namely, that the hollow viscera do not give rise to a sensation of pain from ordinary stimulation, while afferent impulses from them induced by a special local condition—spasm of unstriped muscle—do cause severe pain, localized to some portion of the distribution of the cerebro-spinal nerves.

There are many difficulties in accepting Mackenzie's theory in its details, and another theory based upon what we have come to learn about pain production may now be put forward. Areas of heterotopic visceral pain and tenderness are very puzzling; there are present in them severe pain and acute tenderness, but there is usually no other feature to distinguish them from their surroundings. The colour is the same, there is no added warmth, there is no pilomotor excitement, and the activity of the sweat glands is unaltered. Some observers have claimed that they have been able to detect slight alterations and especially a difference in the local response to the application of warmth, and some oedema may be present, but the information is as yet rather vague, and additional observations are necessary to establish it.

In my view the close similarity between an area of pain and tenderness due to local causes and one of visceral pain and tenderness render it extremely probable that the same underlying condition is present in both of them. I have found that an area of fibrous and muscular pain and tenderness due to local causes may be abolished by the local injection of a small amount of normal saline solution. The mode of its action is uncertain; presumably it helps to get rid of the "p substance" which is present. It is known that areas of heterotopic visceral pain and tenderness can be relieved by the local injection of anaesthetics, and, further, Dr. Forman has found the striking fact that normal saline solution injected into these painful and tender areas can act in the same way, and relieves them.

This procedure can act in no other way than by modifying the local condition, and the observations demonstrate that in "heterotopic areas" the same underlying condition is present—namely, that there has been a local production of a "pain-producing" substance. So far we know of the production of a "p substance" from muscle by local causes. On the evidence provided it seems probable that this substance may be produced in other ways, as by a visceral reflex, and I think that we shall find that in the areas of "heterotopic" visceral pain and tenderness there is formed the same pain-producing substance as that which is formed from local conditions, gives rise to pain, and, in a lesser degree of concentration, causes hyperalgesia.

Summary

Pain, as I understand it, is a definite form of sensation, not to be confused with unpleasantness or with discomfort or mental conflict, served by its own nerves, which are part of the cerebro-spinal nervous system. The various tissues and organs show a wide range of difference in their capability of exciting a pain response; some do so in response to mechanical stimulation, others respond only to a special chemical stimulus.

There is evidence to show that in areas of pain and tenderness from local causes there has been formed locally a "pain-producing" substance, which acts upon the terminals of the pain nerves.

This substance is liberated where there has been skin injury and in muscles under certain conditions. Probably it is liberated in fibrous tissues also.

We know little as yet of the way it is produced nor whether it is liberated from other than local causes. The close resemblance of areas of "homotopic" pain and tenderness to those of "heterotopic" pain and hyperalgesia, and the relief to both conditions afforded by local injection of normal saline solution, point to its being occasionally liberated locally from reflex sympathetic impulses from viscera, and this would afford a satisfactory explanation of Mackenzie's "viscero-sensory reflex."

Citing the various ill effects of a sedentary life, G. Laroche, de Chaisemartin, and A. Grigaut (*Bull. de l'Acad. de Méd.*, October 16th, 1934, p. 291) present a study of the changes in the chemical composition of the blood caused by exercise in twenty-one cases. Tests made at the beginning and end of a six-weeks' course of regulated exercises showed a return to normal of the blood cholesterol, urea, and uric acid; the blood content in these substances is evidence respectively of fat, nitrogenous, and purine and protein metabolism. An increase of weight, due possibly to an increased density of the tissues produced by the exercise, and a stabilization of the blood pressure, due to activation of the general circulation, were also noted. As no dietary or medicinal treatment was given, these effects can only be ascribed to the exercise, which is taken to have a regulating influence on metabolism. It is emphasized that the exercises were regulated, and the authors suggest that sports undertaken without due preparation and medical control may have harmful effects.

"ARTERIAL EMBOLECTOMY"*

BY

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From time to time it falls to the lot of most of us to advise on the treatment of an embolus lodged at some high level in a peripheral artery (subclavian, axillary, brachial, iliac, femoral, popliteal, and even at the aortic bifurcation).

The ideal treatment for arterial embolism, which is a grave emergency calling for intervention as early as, or even earlier than, that in respect of a perforated viscus, is immediate arteriotomy, removal of clot, and suture of the vessel. This procedure, when successful, restores the circulation, and gangrene is averted. Experience drawn from other types of gangrene, such as the senile, arterio-sclerotic, and diabetic types, is quite useless; the rarer embolic form is a distinct and separate entity, which can often be prevented by immediate and decisive surgery.

Several tentative attempts to this end were made during the first decade of this century (Lejar, 1902; Moynihan, 1903; Sampson Handley, 1907; Proust and Lecène, 1908; Carrel and Leriche, 1909), but without success. At the turn of the first decade Carrel's experimental work on the surgery of the blood vessels demonstrated that, given a careful technique, very fine silk suture material, and the use of anticoagulants in the wound, vessels could be incised and closed again without thrombosis at the suture line. His work, and that of others in the same field, paved the way for successful embolectomy, and it was but a matter of opportunity before some more venturesome surgeon would be able to claim a success. This fell to the lot of Labey, who in 1911 removed an embolus arrested for six hours in the femoral artery. Since that date numerous cases have been put on record, some successful, others not, and at the present day embolectomy can be regarded as a standardized and useful addition to surgery. This is in no small degree due to the Swedish surgical school, led by Einar Key, whose masterly papers in 1922 and 1927 laid the foundations on which all else has been built up. In recording my own successful case in 1925 I was able to collect from the literature seventy-three cases, of which twenty-eight had done well. Since then the literature has grown prodigiously, and important analyses have been made by Petitpierre (118 cases, 1928), H. E. Pearse (296 cases, 1933), and Max Danzis (detailed analysis of all cases reported, 1922–32). The time has arrived when general compilations have done their very useful work in driving home the lessons of embolectomy: future general studies are likely to be concerned with embolisms of individual vessels rather than discussions of the whole subject comprehensively.

I do not intend, therefore, to make a new survey of the whole field as I did in 1925, for Danzis's paper, in particular, has brought the whole subject sufficiently up to date. A better purpose will be served by an account of my personal experiences of embolectomy. The 1925 case was the first successful one in this country, and I have now five new cases to report. Two other British successes have, in the meanwhile, been obtained individually by A. G. Banks and G. E. Larks, and others will be recorded to-day.

* Read in opening a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

Personal Cases

The six cases which follow record embolisms in the axillo-brachial junction, brachial, common iliac, and femoral arteries, four of which have been diagnosed and immediately referred to me by my colleague Dr. G. J. Langley.

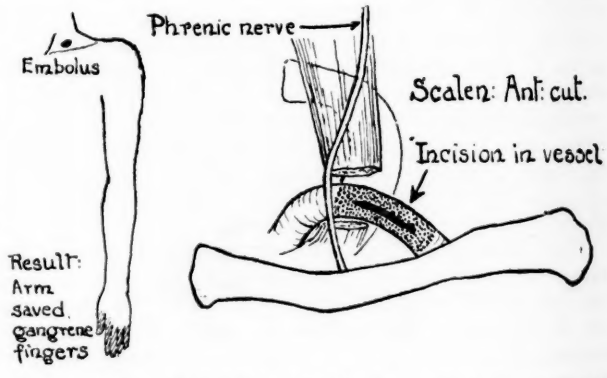
CASE I

This case has already been reported, being my original success of 1925. It concerned a man of 42 years of age, operated upon at Salford Royal Hospital on April 23rd, 1925, for radical cure of an umbilical hernia. Twenty-six hours after operation he complained of pins-and-needles in the left arm, with increasing numbness and paralysis of all muscles below the elbow. The pain rapidly became intense. The arm was blanched, cold, and pulseless below the anterior fold of the axilla. Palpation of the subclavian artery above the clavicle gave free pulsation there, and pulsation was felt again, but not so distinctly, in the axilla. Under local anaesthesia the junction of the axillary and brachial arteries was cut down upon two and a half hours later, a 2 cm. long incision was made in its wall, and a clot removed. The artery was sewn up with fine paraffined silk, with immediate return of colour and muscular power, and cessation of pain. The patient made a perfect recovery, and is well nine years later.

Comment.—This was a completely successful case, pulsation returning at once, and all symptoms disappearing immediately. Banks and Larks have published very similar and equally successful cases since; both were axillo-brachial, both occurred in hospital, and both were post-operative.

CASE II

W. P., male, aged 49 (date, 10/12/31), after a period of ill-health, developed an acute and semi-gangrenous ischio-rectal abscess. He was seen by Dr. Langley, who found a very high blood sugar, and the patient was removed to a nursing home in order to have the abscess opened by my colleague Mr. Garnett Wright. In the early hours of the morning, about 3 o'clock, the patient was awakened from sleep by severe pain in the left arm, which he attributed to a draught. When seen by Dr. Langley later in the morning the patient complained of exceedingly severe pain, and on examination the arm was found to be pale, cold, and pulseless—indeed, no pulse could be felt in the axilla. The projected



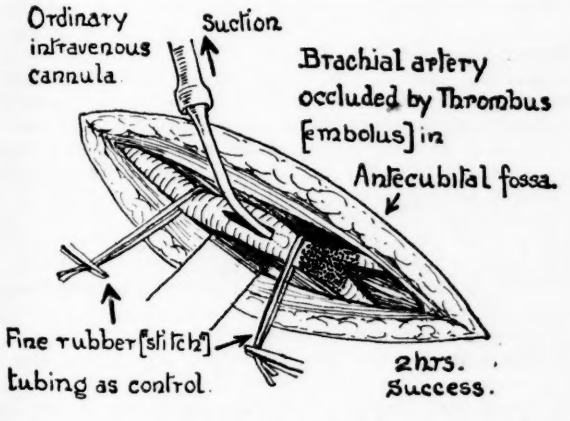
opening of the ischio-rectal abscess was therefore postponed until the arm could be dealt with. I saw the patient with Mr. Wright and Dr. Langley at noon. All the classical signs of acute arterial obstruction were present—a cold, pallid, marbled limb, with wrist-drop, and absence of all finger movements. Flexion and extension of the elbow could be feebly carried out. No pulsation could be detected in any artery of the limb, but above the clavicle, on deep inward pressure, a muffled beat could be felt. The embolus was evidently lodged in the subclavian artery in its first or second part, and operation was decided upon. At 6 p.m., fifteen hours after lodgement, the left subclavian artery was exposed through a transverse incision under omnopon, scopolamine, and gas-oxygen anaesthesia. The clavicular head of the sterno-mastoid muscles was divided, the phrenic nerve retracted inwards, and the scalenus anticus cut through at its

attachment to the first rib. This gave excellent exposure of the artery, in which an embolus could be both seen and felt. The artery was isolated, and two fine controlling bands of rubber tissue threaded round it above and below the clot. A short incision was made in the vessel and the main clot milked out in one piece. A glass suction tube was inserted, and more clot fragments obtained by judicious release of first one and then the other ligature. The arterial incision was closed with interrupted vaselined fine silk, a difficult task in this situation. The immediate result was good, the pulse returning feebly at the wrist, but next morning it could not be felt, though the pain had largely gone and movement had returned in some measure to the hand. During the ensuing days this power disappeared again, and in the long run a considerable amount of tissue had to be removed from the hand, including all the fingers.

Comment.—A point of considerable interest is the origin of the clot in cases such as this with a surgical lesion. The thrombus might come from the auricle, as presumably occurs in the cases of auricular fibrillation. Bull showed that most arterial emboli are cardiac in origin, and only come from great vessels when there is gross disease in the intima. But paradoxical embolism has to be considered, for a patent foramen ovale is present in a number of cases. It seems unlikely that an aseptic clot will arise from a septic area, such as was present in this case, but it is not impossible, for I have seen the median cephalic vein thrombose slowly along its whole length in the arm of a man with a septic wound of the dorsum of the hand. No sign of infection and no tenderness, certainly no cellulitis, developed over the vein, so that a propagating clot, which is in large part at least aseptic, may arise from a septic area. Case II cannot be regarded as a complete failure; for without operation an amputation above the elbow-joint would certainly have been required. The patient's arm now is vastly superior to any artificial limb that was ever invented.

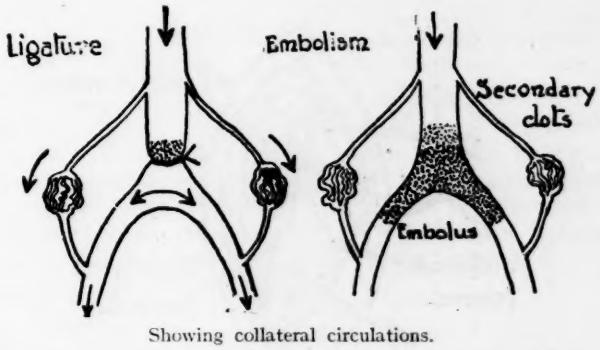
CASE III

S. T. J., male, aged 42 (date, 3/2/32), was admitted to the Salford Royal Hospital under the care of Dr. G. J. Langley suffering from auricular fibrillation. He was treated



with massive doses of digitalis, and on 3/2/32, at 9 p.m., complained of sudden violent pain and weakness in the left hand. On examination no pulses could be felt at the wrist or in the hand; pulsation in the brachial artery could be felt in the lower third of the arm, but ceased in the antecubital fossa. Diagnosis was made of embolus at the bifurcation of the brachial artery, and two and a half hours later, under local anaesthesia, this vessel and the upper ends of the radial and ulnar arteries were exposed. A clot was removed by incision into the brachial artery, and recovery ensued, but with feeble pulses at the wrist. There was a slight degree of ischaemic contracture of the hand and the wrist in this case, a point of considerable pathological interest. This patient was lost sight of on leaving hospital, but he died of syncope whilst on holiday six months later.

Comment.—This case furnished an interesting example of the damage which an embolus will do as compared with arterial ligature at the same level. In the antecubital fossa the brachial can be tied with impunity, yet an embolus, by blocking all collaterals, causes a very severe circulatory disturbance, and the hand may well be lost. In this case collaterals were undoubtedly freed, but I doubt if the full blood stream was restored in the brachial artery past the point of embolism and arteriotomy. At the present day I should not open the brachial artery as soon as it was exposed, as I did in actual fact. It is better to conserve the main trunk and to milk the clot,



Showing collateral circulations.

under rubber ligature control, into a vessel of lesser importance, as I did in Case V, and as Nyström, Schmorell, and Westerborn have so brilliantly done in their cases of aortic embolism. I shall refer to this point in technique again later.

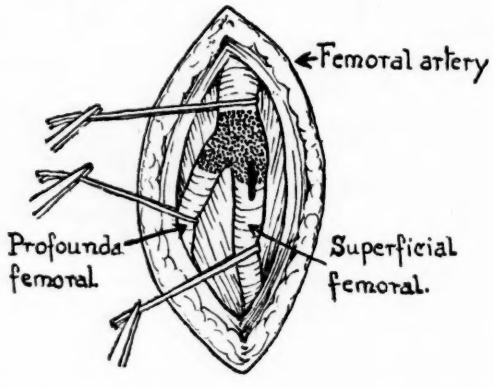
CASE IV

Mrs. Y., aged 66 (date, 20/10/33), a doctor's wife, was admitted to a nursing home under the care of Dr. Langley with high-speed auricular fibrillation. At 6 a.m. she complained of severe pain in the left lower limb. Seen three and a half hours later the limb was cold to the touch, pallid, and powerless, with no pulse in the femoral artery at Poupart's ligament. The right femoral pulse was strong. It was probable, therefore, that the embolus was lodged at the bifurcation of the common iliac artery, and operation was advised and accepted. Under spinal anaesthesia the left common iliac artery was exposed, five hours after embolism, extraperitoneally by cutting through the flat muscles of the abdomen. A large embolus could be felt riding the bifurcation of this vessel, with short limbs projecting into the external and internal iliac arteries. The common iliac was lightly controlled with improvised forceps covered with rubber tubing, and the other two branches controlled by tension bands of thin rubber ("stitch") tubing. An incision 1.5 cm. long was made into the external iliac artery, below the embolus, a suction nozzle was introduced into the empty artery, and an attempt made to break up the clot. This failed until a blunt pituitary spoon was used, when, in a moment or two, the whole Y-shaped embolus came away. Momentary release of the controlling forceps verified the absence of any further clot. The artery was sutured with interrupted sutures of arterial silk, and proved to be watertight after three sutures had been placed. Recovery was complete and perfect. In spite of a small cerebral embolism two months later, the effects of which passed away completely, she is alive and well ten months later, and walks well.

Comment.—This was a completely successful case. It was in many respects a severe test of the operation. There was complete arterial block, and a high-level amputation would have had to be done if the arteriotomy had failed. Amputation in a case with severe cardiac disease is a more difficult obstacle to surmount than an embolectomy, not only immediately, but later on. To a patient with heart disease the loss of a lower limb is a most serious thing, because of the added exertion on movement.

Case V

Mrs. E., aged 52 (date, 28/2/34), was admitted to Salford Royal Hospital by Dr. G. J. Langley, who had seen her in consultation with Dr. Andrew Clarke. Some years ago she had an attack of aphasia, but, apart from recent auricular fibrillation on an old-standing mitral stenosis, had been reasonably well and active. At 10.30 a.m. on 28/2/34 she felt sudden severe pain in the left leg, and signs of embolism at the level of the profunda femoris were classically present. The clot, which made a palpable and visible swelling in the artery, was easily removed under spinal anaesthesia through a 1.5 cm. incision under full control. The immediate effect appeared to be good, though the absence of feeling in the legs prevented discriminating observation. The vessel below the



arteriotomy wound had been noted to be unduly small before the skin was sutured, but this is not uncommon, as vessels contract primarily when stripped. Next day she still complained of pain in the foot, though higher up the circulation had greatly improved. During the next few days the pain became so intense that 1/2 to 1 grain of morphine a day did not control it. Finally, fifteen days after embolism, the patient consented at last to amputation above the knee. A second embolism was found blocking the posterior tibial and an abnormal peroneal artery. Two days later she suddenly developed signs of embolism in the femoral artery of the other side, but just as operation was about to be undertaken all signs and symptoms disappeared, and colour and pulsation returned to the leg. Evidently the embolus had side-tracked into the profunda artery. On 21/3/34 the patient died, with signs suggesting an aortic embolus.

Comment.—This case was a failure, and exemplifies the disadvantages of spinal anaesthesia. There is no escaping its use in iliac and aortic embolism, but in the limbs infiltration anaesthesia is far preferable, as it allows of immediate observations of the effect of the operation on pain and mobility in the limb. Had it been used here we should at once have been sure that something else was wrong, and either an arteriogram would have been made or the popliteal artery exposed. A small embolus was found in the amputated leg in the posterior tibial artery. I believe these distal embolisms to be most serious. Arteriograms in cases of thrombo-angiitis obliterans show how apparently trivial deficiencies will lead to distal gangrene. To be sure, the conditions are not entirely parallel, for there is no general arterial disease involving small vessels in the embolic cases. The pain experienced by this patient was pitiable in its severity, and would have been an object-lesson to those few who think that embolisms are best left alone.

Case VI

Mrs. M., aged 48 (date, 13/4/34), a patient of Dr. Sissons of Lymm, had long suffered from thyrotoxicosis and auricular fibrillation. Three weeks prior to the present attack she had had a sudden attack of pain in the right leg, which became pale, dead, and powerless. At the end of two or three hours, after having kept it warm, and after vigorous massage, it recovered spontaneously. At 2 a.m. on April 13th, 1934, she experienced the same pain in the right arm. Thinking that the symptoms would pass off as they had done in the leg, she did not send for Dr. Sissons until six hours later, when he at once diagnosed a brachial embolism, but she appeared to be dying. As the day wore on she slowly improved generally, and as her physical condition improved so the pain in the arm became more distresing. At 9 p.m., nineteen hours after embolism, a clot was removed under local anaesthesia from the upper end of the right brachial artery at the level of the superior profunda branch. The clot was extracted without incident, but although there was a free flow of blood from the upper end further clot was felt and seen lower down. A second incision was made in the lower third of the arm, and a further small incision made, and the long clot milked out. The pulses still did not return to the wrist, and by this time the patient had developed increasing pain in the abdomen, suggesting an embolism of the mesenteric vessels. The attempt to restore the circulation in the arm was therefore abandoned. Next morning the arm was warm as low as the wrist, and pulsation was present in the antecubital fossa. Pain in the abdomen was by this time very severe, and blood-stained diarrhoea set in, confirming the suspicion of intestinal embolism. She died the next day, forty-eight hours after the embolism.

Comment.—This case would, I think, have been a failure had the patient survived. Of course, her mesenteric embolism made recovery impossible. But this was an interesting case, showing how rapidly secondary thrombus formation occurs in the distal part of the vessel; for, nineteen hours after occlusion, the brachial artery, and no doubt the more distal vessels too, contained long rods of clot. Her medical attendant had wished for an embolectomy at once, but her immediate state of collapse prevented an intervention; no blame therefore attaches to him.

To these cases of proven embolism must be added one in which the left iliac bifurcation was exposed under a mistaken diagnosis. The condition found was uncommon, and the indication for exploration and the decision to operate were, I think, not unsound.

Case VII

J. C., male, aged 33 (date, 14/12/29), consulted his medical attendant, Dr. Young of Kersal, for pain over the heart. Dr. Young made a diagnosis of ulcerative endocarditis and aortic disease, and sent him to bed. At the end of a week his dyspnoea improved, and he got up on his own responsibility. At 8 p.m. he experienced a sudden pain in the left leg, and at 8.30 p.m. was seen in consultation by Dr. Langley, who found the leg to be pulseless and cold. The very proper diagnosis of acute arterial occlusion was made, no doubt embolic, and he was sent into a nursing home. At 11.15 p.m., three and a quarter hours after the presumed embolism, I explored the left common iliac artery. No pulse was present in the left common femoral, and as the right leg was quite unaffected the occlusion should not have been aortic, but somewhere in the iliac arteries, probably at the bifurcation of the common iliac. Under general anaesthesia an oblique incision was made above the inguinal ligament, and the muscles divided. By blunt dissection the bifurcation of the iliac arteries was brought into view, and free pulsation found there. Following the external iliac down, there was seen to be a dark haemorrhage, 4 cm. long, occupying the anterior half of the circumference of the vessel. This had caused so much swelling of the arterial wall that no blood could get past it. This haematoma was incised, but was found to be in the middle as well as the adventitial coat of the artery. The pathology of the condition was clearly the earliest possible stage of a dissecting aneurysm, due to softening of a segment of the artery by lodgement of an infected particle (such as is a commonplace of ulcerative endocarditis) in a vas vasorum. It seemed that nothing useful could be done, though, to be sure, after the relief of tension in the wall by incision feeble pulsation was detected in the femoral but not in the popliteal artery nor at the ankle. The wound was closed, and next day the leg was slightly warmer but far from normal. The patient died on the third day, the combination of unfavourable circumstances being too much for him.

Clinical Picture

The clinical history of the patients in the foregoing series is remarkably constant, and there has been no great difficulty in arriving at a diagnosis (except, of course, in Case VII). This is important, because it is the general practitioner who sees these cases first, and everything depends on the promptitude with which he makes his decision and acts upon it, for he has at best four hours, and at most ten hours, in which to have an arteriotomy performed.

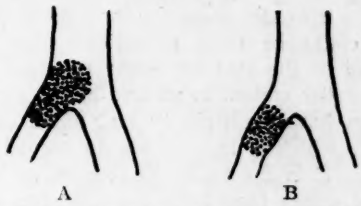
Most of the subjects are sufferers from heart disease with some form of myocardial damage, and auricular stasis with unsuspected clot formation. They stand the relatively benign operation very well. A smaller number occur as post-operative disasters in hospital, and this group undoubtedly has the best chance of survival, for reasons which will occur to everyone.

The picture can best be summed up as consisting of pain, pallor, and paralysis, with absent pulsation in the vessels of the limb. The mechanism of the production of pain of the intensity experienced by these patients is difficult to explain. For the moment we may rest without an explanation, because it is an unescapable fact that diminution in the blood supply to a limb invariably produces pain. Raynaud's disease, intermittent claudication, and even the vaso-constriction produced by cold are all obvious examples. Muscular paralysis is a less familiar result of the same thing, and may puzzle the clinician who has had no experience of embolism. In a case only partially relieved, contracture of the muscle can occur through death of some of its fibres (as happened in Case III). Cutaneous anaesthesia is also found in embolism, sometimes in a known anatomical distribution, and more often with a less recognizable pattern. Nerve endings require an efficient circulation for their proper function; the anaesthesia is therefore more apt to have a vascular distribution than a purely nervous one, though anaemia of nerve trunks as well as of nerve endings must be taken into account in explaining the distribution of anaesthesias and paralyses.

Localization of the Embolus

There have been no mistakes in the localization of the embolus in my own cases. Difficulties are only likely to arise in cases with multiple embolisms (such as Case V), or when the clot slips from its first point of lodgement to be arrested at a lower level. Emboli usually lodge at bifurcations, because the arterial lumen narrows suddenly at the points where large branches are given off. Clots are usually of some size, and on the whole it is more probable that a large rather than a small vessel has been obstructed, otherwise the symptoms would not have arisen.

The ictus is not always as dramatic as in the cases described above, but develops from relatively small beginnings, with paraesthesias and considerable, but not intense, pain associated with pale blotching of the limb. In these cases the embolus has not completely blocked the vessel, and rides the spur at an important bifurcation, allowing a diminished blood stream to flow past. Some such cases make a sudden and spontaneous recovery (as in the first embolism in Case VI), and this occurrence has puzzled some observers, who have invoked spasm rather than clot obstruction as the explanation. In such cases it is justifiable to assume that the clot, after riding for a time and impeding the flow in the main nutrient artery of the limb, suddenly disappears into the less important of the two branches. Thus with a clot insecurely lodged at the common iliac or common femoral bifurcations, the thrombus might on occasion pass into the internal iliac or profunda femoris arteries, where it would do little harm. When the embolus is large, and at once firmly and definitively plugs the vessel, the pain and all other symptoms and signs are instantaneous, and steadily worsen as the hours pass.



A B

A, Clot, chiefly in large branch, partly occluding the main blood supply. B, clot hammered into branch releasing circulation to distal limb.

If there is great difficulty in localizing the site of embolism, help may be obtained from an arteriogram, an idea already put into successful practice by Pearse (see also Abbeloos). Failure to find the obstruction at the expected point is remedied by injection of thorotrast or uroselectan into the artery and a radiograph taken as the solution is injected. I have so far no experience of the method, but it is sound practice.

Treatment

Treatment need not detain us long, for most of the points are inherent to what has gone before. The artery should be exposed with as little delay as is compatible with making the diagnosis and the removal of the patient to a suitable place. The time factor is important, because secondary clot formation beyond the embolus sets in after a few hours, but not immediately. I am no believer in the view advanced by some that it is not until secondary thrombosis occurs that the signs become definite. The vessel distal to the point of occlusion is empty during the first few hours, and ready to accommodate the blood stream as soon as the obstruction is removed.

I believe that the failures that sometimes follow early operation are due to there being more than one embolus, rather than because of coagulation at the point of incision into the artery. The use of local anaesthesia as opposed to spinal is important, as the patient's subjective sensations are most helpful in deciding whether immediate success has been achieved. I have indicated briefly what should be done if the result is not at once satisfactory. There is one point remaining which requires discussion, and it arises out of the treatment of aortic embolism. I have seen three such cases, but in none of them was operation possible for various reasons (the patient's state too desperate or the embolus lodged too long). Nyström and Key both advise the massaging or "milking" of the clot from the aortic bifurcation down into the common femorals under direct vision (the femoral arteries having both been exposed and controlled by rubber bands to prevent the broken clot lodging at some less convenient site). In a case of Hildebrandt's, reported by Schmorell, the clot suddenly and unexpectedly disappeared into the internal iliac artery as it was being massaged down to the exposed femoral artery, with immediate return of function to the limb. I have referred to such a side-tracking as the explanation of the sudden recoveries that may undoubtedly occur in embolisms before such time as the clot becomes adherent to the intima, but it seems to me that a practical hint might be taken from these happy chances, and that when it does not happen of itself we should try to compel it. The first step would therefore be the exposure and temporary control of the main vessel above and below the embolus

in the ordinary, followed by a deliberate attempt to massage the clot into the subsidiary, branch. If this failed the operation would be proceeded with on normal lines and the artery opened. It is likely that the alternative method will not always succeed ; in the late cases it certainly cannot, but it is worth a trial. I must be very explicit as to my exact meaning, for I think that no greater disservice could be done a patient than a haphazard breaking up of the clot by finger pressure, allowing the resulting smaller emboli to go free in the circulation. We should then have multiplicity and small size of emboli, two factors which I have come to regard as most unfavourable. It is far easier to remove an embolus from the femoral artery than from the posterior tibial, so that if the clot cannot be persuaded into the profunda femoris, for example, it must at once be removed by arteriotomy without for one instant relaxing the clamps or temporary ligatures which are preventing the escape of the clot.

BIBLIOGRAPHY

Abbeloos, J. B.: "Localisation des Emboles Artériels par l'Artériographie," *Journ. de Chir. et Ann. Soc. Belge de Chir.*, March, 1933.

Banks, A. G.: "A Case of Brachial Embolectomy," *British Medical Journal*, 1932, i, 56.

Bull, P.: "What can more than 6,000 Post-mortem Examinations Teach Us about Emboli and Embolic Gangrene of the Extremities?" *Acta Chir. Scand.*, 1922, liv, 315.

Carrel, A., and Guthrie, C. C.: "Reversal of the Circulation in a Limb," *Ann. of Surg.*, 1906, xliii, 203.

Danzis, Max: "Arterial Embolectomy," ibid., 1933, xcviii, 249.

Gordon-Watson, C.: "A Case of Embolectomy," *British Medical Journal*, 1926, i, 1032; "Post-operative Embolism of the Femoral Artery," *Clin. Journ.*, 1913.

Handley, Sampson: "An Operation for Embolus," *British Medical Journal*, 1907, i, 712.

Jefferson, G.: "A Successful Case of Embolectomy," ibid., 1925, ii, 985.

Key, E.: "Über Embolektomie als Behandlungsmethode bei Embolischen Funktionsstorungen der Extremitaten," *Acta Chir. Scand.*, 1922, liv, 339; *Zentralbl. f. Chir.*, 1927, liv, 2190.

Larks, G. E.: "A Case of Axillo-brachial Embolectomy," *British Medical Journal*, 1934, i, 616.

Moynihan, Lord: "An Operation for Embolus," ibid., 1907, ii, 826.

Neuhof, H.: "Embolectomy with Partial Arterial Occlusion for Embolism of the Extremities," *Ann. of Surg.*, 1932, xcvi, 44.

Nyström, G.: "Zur Prognose und Methodik der Embolektomie," *Acta Chir. Scand.*, 1926, lx, 229.

Pearse, H. E.: "Embolectomy for Arterial Embolism of the Extremities," *Ann. of Surg.*, 1933, xcviii, 17.

Petitpierre, M.: "Embolie der Extremitaten Arterien," *Schweiz. med. Woch.*, 1928, xxviii, 700.

Proust, H.: "Embolie de l'Artère Femorale: Artériotomie," *Bull. et Mém. Soc. de Chir.*, 1911, N.S., xxxvii, 1094.

Schmorell, H.: "Erfolgreiche Operation bei reitenden Embolus auf der Aortenbifurkation," *Zentralbl. f. Chir.*, 1933, lx, 1509.

Westerborn, A.: "Zwei mit Erfolg operierte Falle von wiederholten der Aartenbifurkation," *Zentralbl. f. Chir.*, 1933, lx, 1509.

According to P. Esch (*Zentralbl. f. Gynäk.*, October 27th, 1934, p. 2530), many cases previously described and accepted as osteomalacia have in reality been examples of generalized osteodystrophia fibrosa (von Recklinghausen's Disease). He gives details of two cases in which this mistake had been made ; in both, radiological examinations of the skeleton, and in one necropsy, showed the characteristic signs of generalized bony fibrosis, with "brown cysts" in certain bones. The patient who died had adenomata in three parathyroid glands. Distinction between osteomalacia and von Recklinghausen's disease is important: in one of Esch's cases of the latter, removal of one and irradiation of the other ovary had been unnecessarily done for a supposed osteomalacia, and on the other hand successful treatment by parathyroidectomy is possible in some cases of osteodystrophia fibrosa. In diagnosis radiology is the most important measure. The pelvic deformity in von Recklinghausen's disease, if symmetrical, causes marked lateral flattening: the pubis projects forward beakwise, the ascending rami of the pubis are nearly parallel, and the inlet takes the shape of the heart on a playing card. Accepting the view that Paget's disease and von Recklinghausen's disease are different varieties of osteodystrophia fibrosa, Esch points out finally that the non-generalized form of the former may begin in the lumbar vertebrae or the pelvis, so that early cases may come first to the gynaecologist.

RUPTURED SPLEEN AFTER TRIFLING MISHAPS

A RECORD OF TWO CASES

BY

HAROLD DODD, M.CH., F.R.C.S.

The cases described below are of interest, owing to the apparently trivial domestic incidents which excited a serious abdominal lesion—that is, a ruptured spleen. These accidents initiated slight but progressive symptoms and physical signs, necessitating splenectomy. Fortunately, judging from the literature, the condition appears to be an uncommon one.

Case I

Frank P , forty-eight hours before admission to hospital, fell against a gas-oven door and bumped his left lower ribs. This accident gave rise to no immediate effects beyond temporary pain. A few hours later he vomited several times and had diarrhoea, but he stated that he saw no blood or slime in the stools. In twelve hours he had developed general abdominal pain, slightly worse in the upper region. After the initial looseness there was no further action of the bowels, so that when he was admitted to hospital he had been constipated for about forty hours.

When I saw him first his general condition was good ; he was complaining of abdominal discomfort, but not of definite

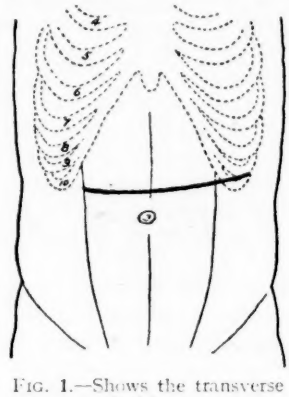


FIG. 1.—Shows the transverse incision.

pain. His temperature was 100°, pulse 110, and respirations 20. The abdominal reflexes were normal, and there was no hyperaesthesia. In the right iliac fossa was a visible fulness with a vaguely defined soft swelling ; he was tender on pressure here—that is, over the appendix and caecum. He was slightly sensitive over the lower left ribs external to and below the nipple, the point of contact with the oven door, but this was apparently outside the abdominal area. The diagnosis of an atypical acute appendix or "something odd" in the abdomen was made. The possibility of the fall having caused an intra-abdominal traumatic lesion, such as a ruptured spleen, was considered and rejected on account of the seeming slightness of the mishap, and also of the clinical picture.

Immediate operation was advised, and was performed under a percaine spinal anaesthetic. Owing to the element of doubt in the diagnosis, the abdomen was opened through a right paramedian incision centred at the umbilicus. Blood shone through the peritoneum and poured out freely when it was opened. This recalled the abandoned suspicion of a ruptured spleen. The peritoneum was rapidly closed and a transverse incision made through the upper left abdomen (Fig. 1). Through this approach the spleen was easily delivered from its surroundings of blood clot ; its vessels were ligatured, and it was quickly removed. On dividing the peritoneum the second time the patient collapsed, became pulseless, and seemed as if he were dead. Intracardiac adrenaline and intravenous saline were administered, and after these his pulse faintly returned. The entire procedure was brief, and while the abdomen was being closed the patient was turned into the Trendelenburg position, extra blankets being tucked around him, and electric stoves placed near by. In an hour's time

he was sufficiently recovered to be levelled up, moved on to his bed, and taken back to the ward. A blood transfusion shortly afterwards established the improvement, and his recovery was uneventful.

The spleen was enlarged to twice its size by several closely adherent layers of thrombus. It was possible to peel these off like the skins of an onion. The surrounding space was filled with a large amount of fluid and clotted blood. Apparently the blow caused a subcapsular injury and haemorrhage, whose waxing and waning stripped up, distended, and ruptured the capsule, forming the laminated perisplenic haematoma.

Deliberating on the sequence of events since, it appears to me that the bleeding from the lacerated spleen irritated the splenic flexure and the descending colon into contraction, thus explaining the diarrhoea. Later, this segment of the bowel became paralysed by aseptic peritonitis, causing partial intestinal obstruction, followed consequently by distension and tenderness of the caecum in the right iliac fossa. It was the latter sign, coupled with the previous history of three weeks' indigestion, which urged the pre-operative diagnosis of acute appendicitis.

Case II

A woman aged 56, while standing on the sill cleaning a window, slipped, and in falling to the floor struck her left side on a chair-seat. She was faint, and felt sick for a time, but continued her duties as a housewife for two days, although admitting that she did not feel well. On the third day she went to bed, owing to weakness and being short of breath. The next day she consulted her doctor, and he sent her to hospital.

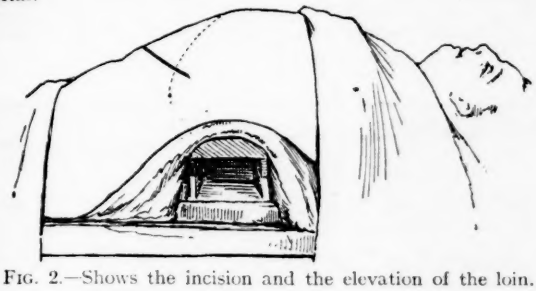


FIG. 2.—Shows the incision and the elevation of the loin.

On admission she complained of breathlessness and of pain in the lower part of her left chest, which was worse on coughing and on movement. In addition, for two days she had experienced stomach-ache and constipation. Her temperature was 99°, pulse 110, and respirations 25. She was placid and did not appear to be anaemic. There was a slight bruise over the ninth and tenth ribs at the mid-axillary line, but, apart from impaired resonance at the left base, the chest was considered to be within the normal. A radiograph of the ribs revealed no injury. The abdomen showed moderate generalized tenderness, and ? some shifting dullness in the flanks. The next and the following day the pulse increased slightly, averaging 120, and the signs were indefinite. When I saw her first on the seventh day after the accident she was much worse, and was undoubtedly very ill; her pallor was striking. The abdomen was distended, visible peristalsis was observed, and at the left upper quadrant was rigidity, tenderness, and dullness. Shifting dullness was still an equivocal physical sign. The haemoglobin was 55 per cent.

The diagnosis of a ruptured spleen was submitted, and confirmed at immediate operation, when the torn organ was removed. The abdomen was filled with blood clot. A transverse abdominal incision was made, and with the bridge of the table raised under her lower ribs as for a gall-bladder operation the exposure was ideal; the entire procedure took fifteen minutes (Fig. 2). She collapsed as the peritoneum was incised, but responded to an immediate intravenous saline and to a blood transfusion two hours later.

An Epitome of the Clinical Picture

This condition—that is, "delayed haemorrhage following traumatic rupture of the spleen"—has recently been very carefully studied by A. H. MacIndoe.[1] With his permission some of his findings are used here. The condition is rare, for he found only forty-five cases in the literature, and reported one of his own.

The Exciting Injury.—This varies from being mild to severe in character. It is usually to the left upper abdomen or to the base of the left side of the thorax. Ruptured spleen from contrecoup is very rare. In chest injuries ruptured spleen complicates fracture of the lower left ribs sufficiently often for the possibility of its occurrence to be always seriously considered. Consequently, these patients should be observed in bed for at least fourteen days. The immediate effect of the accident may be marked temporary shock, grading to almost nothing, so that the patient has forgotten about an injury when questioned a few days later.

Latent Period.—In the article referred to, MacIndoe remarked on the period of "symptomatic silence" after the accident, termed by Baudet the "latent period," and well illustrated by my second case. Two to eight days is the usual time; it has been as long as six months. Although the term "symptomatic silence" is applied to this interval and patients have continued to work, they usually admitted experiencing a persistent dull left upper abdominal pain, and examination showed slight rigidity as well. Less frequently, slight acceleration of the pulse rate, pallor, weakness, dizziness, or faintness are present.

Symptoms and Signs.—The picture may be a dramatic one, patients exhibiting collapse from a sudden torrential bleeding, as in Case II, or one not so striking, but nevertheless equally serious, where slow, progressive bleeding causes a gradual yet persistent deterioration of health (Case I). Varying degrees of pain in the splenic region are present in every case; my patients experienced it. Further pain is referred to the left shoulder, and is of diagnostic significance. Ballance's sign[2]—"a dull note in both flanks, but on the right it can be made to shift, whereas on the left it is constant"—and increased splenic dullness are sometimes observed. There is rigidity in the epigastrium, at the left costo-vertebral angle, and below the left costal margin; fullness may be noted in the last area. Appreciation of the tender fullness in the region of the caecum, resulting from inhibition of the colon about the spleen, is important; I have also seen it in a case of torsion of the spleen. It may proceed to centralized distension—that is, from small intestine obstruction—with visible peristalsis (Case II). Signs of pneumonia, pleurisy, or an effusion may be found at the base of the left lung.

Haemorrhage.—Faintness occurs as the bleeding progresses. An abdominal catastrophe with agonizing pain may be precipitated by a large sudden haemorrhage. It sometimes occurs spontaneously, or after a slight strain such as coughing. Great collapse may follow, causing a perforation of a hollow viscus to be suspected, and sudden death has followed. The power of the bleeding usually increases the original damage to the spleen, proceeding to the gross changes, occasionally morcellement, found at operation. It is quite the exception for a splenic wound to heal.

Summary

1. Two cases of ruptured spleen with delayed acute symptoms are described.

2. An epitome of the condition is added.

3. Emphasis is laid on: (*a*) the possibility of a ruptured spleen occurring with fracture or bruising of the lower left ribs, (*b*) the significance of persistent left upper abdominal pain and muscular tension after even a trivial injury, and (*c*) the facility with which splenectomy can be performed through an upper abdominal incision with the loin well elevated (Fig. 1).

REFERENCES

[1] MacIndoe, A. H.: *Brit. Journ. Surg.*, October, 1932, xx, 249.
[2] Bailey, Hamilton: *Physical Signs in Clinical Surgery*, Bristol, 1933, p. 201.

A CASE OF CONGENITAL HEART-BLOCK

BY

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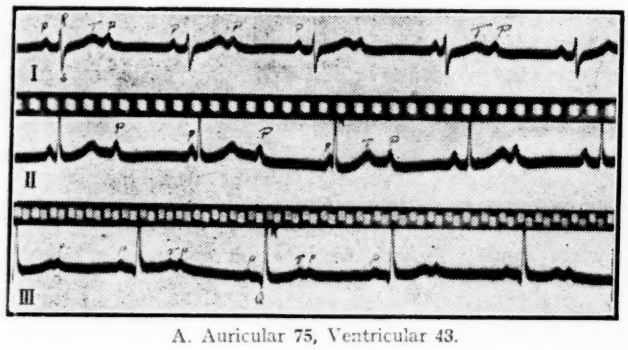
Congenital heart-block appears to be a comparatively rare condition, and so few cases have been confirmed by electrocardiogram that I am prompted to make an addition to the sparse literature on this interesting abnormality.

Before heart-block can be considered to be of congenital origin it must conform to the criteria laid down by Yater[1] in his exhaustive review of the literature on this subject in 1929. There must be some evidence of the existence of a slow pulse at an early age. A graphic record soon after birth would further establish its existence in the absence of a history of an acute infection such as diphtheria, scarlet fever, chorea, influenza, rheumatic fever, or other causes of myocarditis. The knowledge of syncopal attacks at an early age, combined with a slow pulse and graphic evidence in later years, would lend support to its congenital origin, while the coexistence of other congenital cardiac abnormalities would support a diagnosis of congenital heart-block.



A. Auricular 75, Ventricular 43.

Case Records

A girl, aged 8½ years, was brought to the cardiac out-patient department for examination to ascertain the present condition of her heart. Her mother stated that the child was born with a slow pulse, and that her doctor had said she had had a murmur in her heart from birth. Born at full term, the patient never at any time exhibited cyanosis or fits of any kind. There was a complete absence in her history of an attack of tonsillitis, diphtheria, chorea, etc., likely to interfere with the conduction through the bundle of His. There were no obvious stigmata of congenital syphilis.

A bright, vivacious, and intelligent girl of more than the average size, she suffers no distress whatever from her condition. There is complete absence of cyanosis, even with exertion at games. Her pulse rate was regular at 42 a minute. To all outward appearances she does not differ from any other girl of her age; in fact, she might be considered to exceed the average, both physically and intellectually.

RESULTS OF EXAMINATION

The apex beat was not displaced, and the cardiac impulse was not abnormal. There was no thrill palpable over the praecordium, even after exertion. A continuous murmur was audible all over the praecordium; this was thought to be due to a defect in the interventricular septum. The blood Wassermann test was negative. The pulse rate at rest was regular at 43 a minute, and increased to 48 after slight exertion.

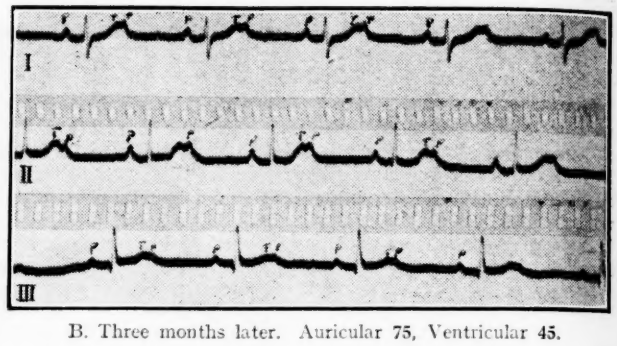
X-ray and screen examinations were reported on as follows by Dr. F. G. Stewart: "Heart shows some transverse enlargement, the heart-lung coefficient being 1 to 1.87. The apex lies above the diaphragm, and is rounded. Pulsation good. The shadow of the right auricle is not enlarged. The pulmonary area is prominent and pulsation marked. First oblique shows the left auricle to be enlarged backwards to a moderate degree. The conus is rather prominent. Aorta not enlarged. *Findings:* Enlargement of the left and right ventricles and of the left auricle. There is no enlargement of the aorta, but the pulmonary artery is enlarged.

The electrocardiograms revealed the following (see Figs.):

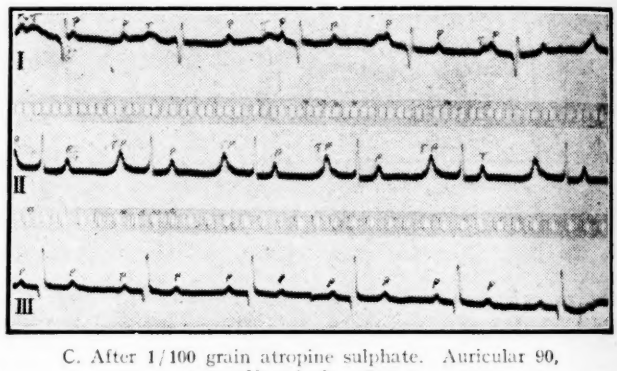
A. Complete heart-block of roughly 2 to 1 rate, the auricular rate being 75 and the ventricular 43 a minute.

B. Films taken three months later show the persistence of the block without alteration in the auricular rate, and a ventricular rate of 45 a minute.

C. Atropine sulphate (1/100 grain) was injected subcutaneously, and this record was made when the patient was under its influence: about three-quarters of an hour after Tracing B and half an hour after injection of the atropine. A very definite alteration is seen, especially in Lead II, showing the P wave superimposed on the T. The effect of the atropine on the auricular rate was obvious, increasing it from 75 to 90 a minute, whilst the ventricular rate was entirely unaffected.



B. Three months later. Auricular 75, Ventricular 45.



C. After 1/100 grain atropine sulphate. Auricular 90, Ventricular 45.

Comment

The literature contains about forty cases of congenital heart-block, the great majority of them having a patent ventricular septum. One is struck by the paucity of symptoms in most of these cases. In roughly half of them there was an absence of cyanosis, in others it was mild, whilst in a few it was noticed at birth, but disappeared in later years. This cyanosis can justly be attributed to the coexisting cardiac defects. Fainting fits or syncopal attacks were rare, occurring in only seven cases, one of which had a pulse rate of 20. This case, reported by D'Espine and Cotton,[2] showed the slowest rate of any of the recorded cases; while that of Nicholson,[3] with a rate of 80, showed the highest. The average rate in congenital heart-block is roughly 43 a minute.

The commonest coexisting lesion is a patent interventricular septum, and was observed in twenty-five cases, while pulmonary stenosis accompanied three of them. It is extremely difficult to give a prognosis on account of the limited literature available. It is highly doubtful if the heart-block itself would influence the prognosis to any great extent. The other cardiac abnormalities must interfere with the outlook considerably.

Of the recorded cases some deaths occurred at a very early age, while others have been known to reach the age of 21 (Calandre[4]), 20 (Smith[5]), and 18 (Myer[6]) years.

Dr. Aitken,[7] in her excellent survey of the literature, described two cases of this abnormality, and suggests an overgrowth of fibrous tissue between the auricle and ventricle as the possible cause, leading to interference with the conduction through the bundle of His.

REFERENCES

1 Yater, W. M.: *Amer. Journ. Dis. Child.*, 1929, xxxviii, 112.
2 D'Espine, A., and Cotton, E.: *Bull. de l'Acad. de Méd.*, 1915, lxxiv, 292.
3 Nicholson, Gertrude, Shulman, H. I., and Green, D. L.: *Amer. Journ. Dis. Child.*, 1929, xxxvii, 580.
4 Calandre, L.: *Arch. de cardiol. y hematol.*, 1921, ii, 225.
5 Smith, S. C.: *Journ. Amer. Med. Assoc.*, 1921, lxxvi, 17.
6 Myer, P.: *Arch. des Mal. du Cœur*, 1923, xvi, 16.
7 Aitken, J.: *Lancet*, 1932, ii, 1375.

SUBLEUKAEMIC LYMPHADENOSIS IN A CHILD

BY

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Lymphadenosis in children is a rare condition, and the case reported here has some unusual and interesting features. Gittins,[1] in a recent review of the condition, states that the average duration of lymphadenosis in children is under two months, and the most chronic case recorded lasted not more than eight months. Cases of myelogenous leukaemia may, however, give a longer history. The following case, definitely of lymphatic type, lasted at least ten months, and a special feature was the presence of deposits of lymphoid cells in the subcutaneous tissues of the eyelids. Subcutaneous deposits are not very uncommon in lymphatic leukaemia in adults, but in children they are extremely rare, and in a review of 100 cases Ramsay[2] records only one, that of a case reported by Ward[3] in 1912.

Case Record

The patient, a male aged 4½ years, was admitted to Booth Hall Hospital on January 17th, 1933, with a history of loss of weight and anorexia for several weeks. The child was fat and flabby, and the skin yellowish; the gums were ulcerated, the lips excoriated, and the breath foul. Local and dental treatment sufficed to clear up the mouth condition, and the child was discharged one month later, no blood examination having been made.

On June 16th, 1933, he was readmitted, having been ill almost constantly since discharge, with listlessness and tiredness, repeated attacks of pain in the limbs, slight fever, and occasional night sweats. At this time the skin was definitely yellowish and waxy, and there was marked gingivitis. Neither the lymph glands nor the spleen were enlarged. A blood examination showed a severe anaemia, with a colour index of unity and 7,000 leucocytes per c.mm., of which 82 per cent. were lymphocytes. The possibility of a primary anaemia of pernicious type was considered. Fractional gastric analysis showed complete achlorhydria, but the exhibition of a potent liver extract given intramuscularly failed to produce any reticulocyte response. Subsequent blood counts (see table) showed great variation in the total number of leucocytes from 5,000 to 33,000, but always with a high proportion of lymphocytes and generally some lymphoblasts, which nine days before death constituted 84 per cent. of the total white cells. The hypoplastic anaemia, improved for a time by a blood transfusion, was present throughout, and blood platelets were very scanty. A somewhat similar blood picture of lymphadenosis commencing with hypoplastic anaemia has been reported by Weber and Weisswange.[4]

Date	R.B.Cs. (× 1000)	Hb. %	Colour Index	W.B.Cs. (total)	Differential Count: Percentages								
					Polymorphs	Lymphocytes	Eosinophils	Basophils	Monocytes	Myelocytes	Lymphoblasts	Normoblasts	Megaloblasts	Blood Platelets
June 23rd ...	1,328	25	0.95	7,000	14	82	1	—	1	2	—	2	1	V. scanty
July 12th ...	992	27	1.05	33,000	4.5	88.5	0.5	–	1	0.5	5	0.5	1.5	V. scanty
July 21st ...	2 240	47	1.1	19 000	6	73	—	—	1	—	20	—	1	V. scanty
Aug. 2nd ...	1,856	41	1.3	9,200	4	56	—	–	3	1	36	—	—	V. scanty
Sept. 15th ...	952	25	1.0	4,000	6	92	1	—	–	—	1	1	—	V. scanty
Oct. 3rd ...	2,096	42	1.0	5,000	21	71	—	—	3	—	5	2	—	Fairly plentiful
Oct. 17th ...	2.568	49	1.0	7,200	12	70	—	–	3	1	14	1	—	V. scanty
Nov. 10th ...	1,704	33	1.0	22,000	1	12	—	—	3	—	84	—	—	V. scanty

After four weeks in hospital the mouth was normal, but a slight swelling appeared in the right upper eyelid, and shortly afterwards discrete shotty glands were palpated in the neck and groin. The glands varied much in size at different times during the illness, but tended to become larger. Three weeks after the appearance of the nodule in the right upper eyelid a similar swelling appeared in the left upper eyelid. The child was noticed to bruise easily, and at one time a fine purpuric rash appeared on the limbs and persisted for two days. *X*-ray examination of the long bones showed osteoporosis, a condition which has previously been noted in this disease. During the last month the spleen became palpable, and a week before death reached almost to the umbilicus, while the liver was one inch below the costal margin. A swinging temperature, 97° to 100.2° F., was present throughout the illness, and the general condition, which was fairly good for the first three months, gradually deteriorated. The urine contained neither albumin nor Bence-Jones's albumose. Death occurred on November 19th, 1933.

If it be admitted that the illness in January was due to the same cause as that found in June, which seems extremely probable, the duration of the illness was at least ten months.

POST-MORTEM FINDINGS

The chief features at the post-mortem examination were as follows. Skin: minute petechial haemorrhages present; almond-shaped subcutaneous nodules, approximately half an inch in length, present in each upper eyelid. Lymph glands: submental, cervical, axillary, inguinal, and mesenteric glands definitely enlarged. Pericardium: multiple subpericardial haemorrhages. Lungs: many haemorrhagic infarcts throughout all lobes. Liver: weight 1,000 grams; pale yellow in colour and of increased consistency. Spleen: weight 170 grams; definitely enlarged and of increased consistency. Meninges: small recent subdural haemorrhage on left side. Marrow of femur: dark red. Other organs: nothing of note.

MICROSCOPICAL REPORT ON TISSUES

Microscopically the subcutaneous nodules are of moderate vascularity and not encapsulated. They consist of large numbers of fairly widely spaced mononuclear cells, which have a large nucleus, slight chromatin differentiation, and a rim of basophilic non-granular cytoplasm. The stroma is loose and coarse, and in it are many voluntary muscle fibres between which the invading cells have infiltrated, giving almost the appearance of a sarcoma. Mitotic figures are present in small numbers. The oxidase reaction on the cells in these rabbits and on similar cells found in the bone marrow and elsewhere in the tissues is completely negative, and as the cells are similar to those found on many occasions in the blood they must be regarded as lymphocytes or their precursors. Fresh films of bone marrow from the femur show an almost entire replacement of erythroblastic tissue by primitive lymphocytic cells, very few normoblasts being present. No myelocytes can be seen.

The lymph glands show massive accumulations of similar cells, and the lymph follicles are poorly defined. The pulp

of the spleen consists chiefly of cells similar to those found in the bone marrow. There is an extensive central fatty change in the liver, and a moderate amount of free iron in the cells around the portal area. Some well-circumscribed periportal collections of lymphoid cells are present.

Summary

The blood and post-mortem examinations and the histological findings leave no doubt that the case was one of lymphadenosis, for the greater part of its course subleukaemic, the special features being the relative chronicity and the presence of subcutaneous deposits of lymphoid cells, both extremely rare occurrences in this disease in children.

I wish to thank Dr. J. D'Ewart, medical superintendent of Booth Hall Hospital, for permission to publish this case.

References

[1] Gittins, Robert: *Arch. Dis. in Child.*, 1933, viii, 291.
[2] Ramsay, G. W. St. C.: Ibid., 1927, ii, 119.
[3] Ward, G. R.: *Proc. Roy. Soc. Med.*, 1911–12, v, 73.
[4] Weber, F. P., and Weisswange, A.: Ibid., 1933, xxvi, 1012.

A PRACTICAL NOTE ON SUICIDE

BY

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It is an aphorism among psychiatrists that every case of depression is a potential suicide. Yet how difficult it is to get the general public to realize this fact. Reports of inquests on suicides, even when the verdict is the usual one of unsound mind, contain as a rule singularly little indication that the relatives had observed in the victim previous to the act the existence of any abnormality of mind. On inquiry by the coroner it may transpire that the deceased was "worried" or sleepless or suffered from pains in the head. But the depression, almost always present, is usually minimized or completely overlooked, and the act of suicide invariably takes the relatives by surprise. Depression is the commonest precursor of suicide, but even when it is recognized by those about the patient as a sign of mental disorder it still remains a problem to persuade them of the danger of suicide that consequently exists. They generally consider they know better. They tell you they understand the patient so well and are sure that he, or she, would never think of doing anything like that.

A case which emphasizes this difficulty was that of a woman who had become depressed after the death of her husband some weeks previously. The sister, who was looking after the patient, was warned that a definite danger of suicide existed. She plainly thought an alarmist view was being taken, although admitting that the patient was "not herself." It was agreed that she should be sent without delay into a home on the South Coast, and in the evening another relative telephoned to say that final arrangements had been completed and that he would accompany the sick woman the following day to the nursing home. The warning was repeated to him, but little notice was taken of it, and in the train next day he allowed the patient to leave the carriage. She opened a door in the corridor, threw herself on to the line, and was later found dead. At the inquest no reference was made to the warnings that had been given.

Suicide may be actuated by a variety of motives depending on the nature of the mental disorder and the mechanisms at work in the patient's mind. Our insight into these motives will obviously depend on the depth of our psychological analysis of the mental state. I do not intend in this article to consider the influence of the deeper levels of mental activity. The introduction of the concept of the unconscious has thrown much light on the whole subject of mental disorder, an instance of great importance being the discovery that motives which are apparent on the surface may be no true indication of those existing deeper in the mind. But the development of unconscious psychology has brought about also many complexities of theory and technical problems which can more appropriately be dealt with in journals specially devoted to the subject. Melancholia is the condition in which suicide is most to be feared, and the periods of greatest danger in the majority of cases are at the beginning of an attack and when the patient is showing signs of recovery. At these stages psychomotor inhibition, which puts a brake on suicidal impulses, is less developed, and supervision commonly tends to be relaxed.

Suicide a Means of Escape

Speaking generally, we may say that suicide is a way of escape from a situation that has become intolerable. Mental conflict may reach such a degree of intensity that deliverance from the unbearable conditions seems an imperative necessity. People vary in their capacity to tolerate conflict, anxiety, or "worry," and an accidental accumulation of troubles or an incident which to others seems comparatively unimportant may, in unstable types, precipitate an attempt at self-destruction. Sometimes a transient condition of confusion may develop at the critical moment or a short phase of automatism may occur when the act is committed. In these cases, if the attempt is unsuccessful, there is an amnesia of varying duration, and the patient may "come to" and discover himself the victim of injuries with no recollection how they occurred.

Worry from external circumstances, unless the latter are of an extraordinary or exceptionally disturbing character, cannot be said to be sufficient in itself to arouse a suicidal attitude of mind. Other components are always present, the external conditions acting only as accumulative and precipitating factors. Guilt and self-reproach are the commonest motivating elements in melancholia, and may develop to an extreme and overwhelming degree. In these cases suicide is a punishment for sin, an atonement and washing out of guilt. In other cases fear or apprehension of something terrible about to happen is the dominating feature. The grounds for the fear may be unknown or may be definite, though irrational, such as the conviction of being about to be tortured. In this condition the suicidal attempt is made to avoid the horrors that are thought to be imminent.

A belief that they are injuring those they love is a common motive in another class of depressed patients which may produce great mental distress and lead to determined efforts at suicide. It may be some spiritual injury they feel they are the cause of, or they may believe they are unclean and in danger of transmitting some dreadful disease. Self-pity and the hypochondriacal attitude may be accompanied by suicidal attempts, and in these cases an exaggerated egoism seems to be a constant feature. They frequently tend to dramatize themselves and appear to obtain a distinct satisfaction in the process. Savage[1] declared that as a rule the hypochondriac is not actively suicidal, although he made an exception in the case of sexual hypochondriasis, and certainly when suicidal attempts do take place in these cases they appear often to be curiously unconvincing. Other writers, however, are not of this opinion, and it is probable that there are at least two forms of this disorder which differ considerably so far as the danger of suicide is concerned.

Suicidal and Homicidal Impulses

The paranoid psychoses are more commonly associated with homicidal than with suicidal tendencies. Mercier went so far as to say that no paranoiac should be allowed at large, and that if he were so allowed his perpetration of a murder was merely a matter of time and was certain to take place.[2] However that may be, these cases with their morbid suspiciousness and persecuted outlook on the world sometimes find the strain of a life of victimization too much for them and make an end of it to obtain relief. When the mental conflict turns in this direction it generally is put into effect with great thoroughness and determination. The relation between suicidal and homicidal impulses in cases of mental disorder is a problem of great interest and importance. They may occur together as in the not infrequent case of murder

[1] *Insanity and Allied Neuroses*, fourth edition, 1907, p. 146.
[2] *Text Book of Insanity*, second edition, 1914, p. 290.

and suicide by the same individual. Or they may alternate, and a patient from being suicidally inclined may become violent towards others, the impulse apparently, instead of being directed inwards towards the self, is directed outwards as aggressiveness.

A woman who became depressed after her father's death described how a tragedy very nearly took place one night when, after lying in bed thinking that it was no use for her and her two sisters to go on living as it all ended in nothing, she got up with the intention of killing her sisters and herself. She obtained a pair of scissors with which to carry out her design, but an acute mental conflict supervened which ended by her cutting off her hair.

How commonly a history of suicidal attempts is found in convicted murderers I am unable to state, but cases of considerable interest in this connexion occur from time to time.

Phobias and Obsessions

Phobias and obsessions most commonly develop as symptoms of the psychoneuroses. Their relation to the major psychotic states is not yet clear, although they are quite frequently associated and in particular may usher in an attack of insanity. In regard to the danger of suicide in these cases two problems require to be considered. The first refers to the mental conflict which is the usual accompaniment of these disturbing symptoms. This may be of a very distressing nature and may cause a reactive condition of depression with suicidal impulses.

A case in point was that of an unmarried lady of 60 who, on the occasion of a visit to a cinema, saw a picture of a number of small boys bathing naked in a river. There came into her mind immediately some obscene words which she was unable to banish despite all her efforts. The condition soon became established with the typical characters of an obsessional neurosis. She struggled with it for some time until she became convinced that she must be a wicked woman to harbour such thoughts and attempted to end her life by taking poison. In another case a woman of 28 developed the obsession that she must find the meaning in everything. She felt compelled to ask herself this question about all the most ordinary acts of her life and to analyse everything with this end in view. She always arrived, as she put it, at a dead end and spoke of suicide as the only way out. After a few months she ended the strain of the constant questioning by putting her head in the gas oven.

The other problem concerns the seriousness with which a phobia ought to be regarded. Cases occur, for example, in which a fear of committing suicide exists or a fear of travelling in a train or a fear in a mother that she will injure her child. The doctor may be faced with a grave responsibility. Is he to take the phobia at its face value and deal with the situation as if a real danger existed? Or is he to rely upon the teaching of those who say that phobias are never translated into action, and advise the patient to court the occasions of his fear and "conquer" it? The answer will depend to some extent on the nature of the phobia. It may be one of little practical importance to the individual such as a fear of heights, but if it involves another person it assumes a more serious aspect. Bearing in mind that a fear commonly denotes a wish in the unconscious, that we can never be sure a reactive state of depression will not develop, and, further, as we cannot exclude the likelihood that the phobia may be the incipient stage of a psychosis, the wise physician will be alive to the possibilities and act with caution in the advice he gives.

A woman of 28, some months after the birth of her first child, developed the fear that she would injure it. She was afraid to touch it in case she might do it harm; phrases such as "a nice little throat to cut" came into her mind and distressed her greatly. She had to keep looking at the baby to assure herself she had not done something to it. In this case it was considered advisable to separate the mother and the child, but the condition proved persistent, and four months later she committed suicide by taking poison.

Impulsive Suicide

Suicide is occasionally attributed to mere impulse—that is to say, to a sudden action that appears quite unmotivated and is carried out in the absence of any grounds or reason for it. Attempts of this nature are said to take place particularly in schizophrenia, but it is very doubtful if such an anomaly can ever with any assurance be said to occur. Our knowledge of mental mechanisms and of mental life in general enables us to draw the highly probable conclusion that a motive exists in every case of suicide, although it may not be easily discoverable. Guilt and anxiety, for example, are factors which are very prevalent in all forms of mental disorder. They may exist concealed and buried and so unapparent to ordinary examination, and may be the source of suicidal tendencies in seemingly unlikely cases. Impulsiveness in this sense must, however, be distinguished from the impulse which is the final step in a suicidal attempt. Many cases of mental abnormality contemplate suicide long before it is put into effect. In other instances a background of depression exists as the predisposing condition, and in both cases the actual attempt may take place as the result of a sudden impulse.

This is well illustrated in the case of a man of 53 who became depressed after an attack of influenza. Following upon a sleepless night his depression increased and he developed the idea that a crowd had gathered outside his house and were clamouring for the return of certain club moneys he had in his control. He was greatly distressed at this, but declared that the idea of suicide had not up to that point entered his mind. He went into the bathroom, happened to see his razor lying on a shelf, and, impulsively seizing it, drew the blade across his throat, inflicting a serious wound.

Suicide may also be associated with the occurrence of hallucinations. These are most commonly of the auditory type and constitute as a rule only part of the mental syndrome. Sometimes "voices" explicitly instigate a person to kill himself, and the situation then becomes a particularly anxious one, as the injunction is generally conveyed in the form of an order or command. These voices have a peculiarly convincing and compelling effect upon the mind, considerations of reality being of little weight in comparison. They are of graver import in this respect than delusions and seem to lead to action of the most direct and dangerous type.

Other Aspects of Motivation

There are other issues of importance in connexion with the problem of motivation in suicide, in particular the significance of unconscious factors. Motives that are apparent at the clinical level of mental activity are never the sole or essential elements at work. As was mentioned earlier in the article, deeper psychological investigation always reveals additional and generally more significant causes. A common constituent, for example, of melancholia, is hate, but it is repressed and concealed as a rule. The mechanism of identification with another—which makes suicide equivalent to homicide—and such motives as the desire for rebirth into a happier state of existence are revealed in most cases only by special methods of investigation. The relation of suicide to the death instinct and to the super-ego—the nucleus of the moral sentiments—are other problems of intrinsic importance. But it is impossible here to enter in any detail into a consideration of this aspect of the subject; too many technical problems are involved and too many points that are still open to dispute. Concerning the importance of sexual disabilities in these cases Savage[3] remarked that no class of patients is more suicidally inclined than those who believe themselves to be impotent, and none are more dangerous than those who believe themselves to be "tapped," "drawn," or "emasculated" by others—an interesting adumbration of modern views on the significance of sexual factors.

Individual Preferences

An important fact about suicide is the individual preference for particular methods that is exhibited in practically all cases. Suicides, consciously or unconsciously, select certain modes of death and restrict themselves more or less to these, even neglecting opportunities that may arise in other directions.

A case in point was that of a depressed and apprehensive woman who believed she was going to be murdered. She pleaded frequently to be given chloroform and killed quickly

[3] Loc. cit., p. 264.

instead of being tortured to death, and on one occasion swallowed a large coin, which fortunately was recovered without much difficulty. She discovered one day a window open and unattended on an upper floor and climbed through on to a small balcony. Instead, however, of precipitating herself to the ground she dropped from the balcony on to a garden table, and was brought back little the worse, having sustained nothing more than a few bruises. Shortly afterwards she was again pleading to be put out of her misery.

Another woman who was depressed and abnormally suspicious threw herself from a first-floor window, fracturing her pelvis and femur. She was offered brandy by her sister but refused it, saying she believed it was poisoned.

This selectivity is a source of security in most of these cases and lightens the anxiety of supervision. If it were not so the difficulties of treatment would be greatly increased, as it is probably impossible to prevent suicide in the case of a wholly determined person on the look out to seize any means of achieving his end. At the same time it cannot be entirely relied upon in practice, as we can never be sure that our insight into particular cases is sufficiently complete.

The different methods that are adopted—poisoning, hanging, precipitation, and the others—have in all probability a special psychological significance in each individual case. It is this that leads to the development of the preferences we have mentioned, but further consideration of this subject would lead us too far into the region of unconscious psychology. Suggestion is a significant factor in this connexion, and it is generally held that newspaper accounts of suicides provide a dangerous source of stimulation and encouragement. "Epidemics" have been described of multiple cases of suicide carried out by the same means, originating apparently as the result of the prominent and sensational reports appearing in the Press. This is, without doubt, an exaggerated view, for our knowledge of psychological causation makes it obvious that a pre-existing tendency must invariably be present and that suggestion is but the end link in a chain of determining conditions. A family history of suicide may have a strong suggestive influence in unstable persons. In the case of a man who became depressed and hypochondriacal two of his sisters had committed suicide and his father had attempted it unsuccessfully. The brother and father of another similar case had committed suicide, and the patient on several occasions remarked that the only way out of his misery seemed to be "to do what the others did." Both of these cases were lost sight of, but the influence of the family history was looked upon very seriously while they were under treatment.

Threat and Performance

It is commonly believed that those who speak openly of suicide and threaten to carry it out are not really dangerous in this respect, and seldom or never put the threats into effect. Sometimes patients suffering from depression irritate and exhaust their relatives by referring frequently to suicide while ignoring daily opportunities, and the impression is received that it is done merely to attract attention and obtain sympathy. It is important to realize that this is an erroneous view, as experience shows that persons of this type are quite as likely to commit suicide as those who are more inhibited and reticent on the subject.

A striking example was that of a woman who became depressed and frequently threatened to end her life. The husband was advised not to take the threats seriously, and allowed her on one occasion to open the carriage door of the train in which they were travelling when she said she wanted to throw herself out. She did nothing at the time, but later precipitated herself from an upper-floor window and fractured her skull. Another patient of the same kind was permitted by her husband to open the window on an upper floor of the house and look down after she had said she would jump out and kill herself. She did not carry out her threat on that occasion, but some weeks later made a serious attempt at suicide by swallowing a number of sedative tablets.

Some depressed patients are very theatrical in the expression of their misery and dramatize themselves in a way that looks unreal and artificial. It is often thought that this attitude denotes a lack of seriousness and a desire to draw attention to themselves, and that in consequence little danger of suicide need be apprehended. This is a mistaken opinion and may, if acted upon, lead to tragedy.

A case which well illustrated this fact was that of a woman who had been under care for some time suffering from melancholia. She made the most theatrical manifestations of grief and remorse, going down on her knees, clasping her hands before her, and begging forgiveness from the doctor for imaginary sins. A strong-minded aunt came from abroad and, after a visit to the patient, said the histrionics were just "put on," that she would look after her and talk the nonsense out of her. The patient was taken to a hotel in London and the following day was found dead, having thrown herself from a top-floor window.

Unsuccessful attempts at suicide very frequently occur and are often taken to imply a lack of serious intention. It is not an uncommon thing to meet cases in which two or more attempts have been made, sometimes to all appearance of a doubtful or even trivial character. It is unwise, however, to label these mere exploits or "demonstrations" made simply for the purpose of attracting the notice and gaining the solicitude of others. The suicidal impulse seldom occurs in a free and uninhibited form. Generally the tendency is in conflict with other restraining tendencies, which accounts for the irresolution so often displayed, the sudden change of mind, and the reduction of an attempt, begun in earnestness, to insignificant proportions. The mental state is generally double-sided or ambivalent, consisting of opposing impulses, and the issue will depend on the relative strengths of these conflicting forces. Indecision, therefore, or apparent insincerity should not blind us to the existence of dangerous proclivities, as a situation may develop which increases the tension and tips the balance with fatal results.

A case in which this condition was well displayed was that of a woman who became depressed and acted in a manner that was looked upon as merely foolish and unbalanced. She waded into the sea and came out again of her own accord, making demonstrations, as it was thought, to draw attention to herself. These episodes occurred on two or three occasions and were not looked upon as indicating a true suicidal tendency. One day, however, she threw herself from an upper floor over the staircase and fractured her spine.

On the other hand, occasionally the act is carried out in a very determined and even over-determined way, as in the case of a man, reported some time ago from France, who took poison, mounted a chair with a rope round his neck, the other end being attached to a chandelier, stabbed himself in the chest and, as he kicked the chair away, shot himself in the head.

In conclusion, an aspect of the subject of great moral and practical importance calls for consideration—namely, the responsibility that attaches to the relatives or others in a case of mental abnormality when warnings have been disregarded or obvious indications of danger ignored and a tragedy ensues. The problem was illustrated in the first case described in this article, but it applies not only to persons with suicidal tendencies but to others also, in particular those with dangerous proclivities. A striking instance in point was the celebrated McNaughten case, which aroused a great deal of discussion at the time and led to the famous ruling of the judges—the basis of our present law on criminal responsibility.

In 1843 Daniel McNaughten shot and killed Edward Drummond, Sir Robert Peel's private secretary. The crime was readily recognized to be the outcome of McNaughten's abnormal state of mind. He had never, in fact, seen Mr. Drummond before, and seems to have met him accidentally in the street just before the tragedy took place. The singular fact, however, that appears in connexion with the case is that for at least two years before the crime McNaughten had been known to be suffering from delusions. Incredible as it may seem, he had consulted on the subject of his delusions not only his father but also, among others, a clergyman, the Provost of Glasgow, the Sheriff of Lanark, a member of Parliament, and the Commissioner of Police for Glasgow, and not one of them had felt called upon, in the public interest, to take any action in respect of the man's obvious mental abnormality. As a legal commentator[1] on the case remarks: "Who was morally responsible for Mr. Drummond's death? Was it the unfortunate prisoner himself, who was suffering from a diseased brain? Was it not rather his relations and those others whom he consulted in his misery, and who yet took no steps to have him placed under medical care?"

[1] *The Defence of Insanity in Criminal Cases.* An Essay by F. Lancelot Everest, Barrister-at-Law.

Clinical Memoranda

JACKSONIAN ATTACKS IN CONNEXION WITH EXTRADURAL ABSCESS OF THE FRONTAL LOBE

In both of the cases reported below the progress was extremely rapid—approximately one week. There was a history that the patients had been swimming and diving on several occasions during the week previous to the onset. The inability to demonstrate any direct spread through bone in Case I seems to indicate that the infection travelled in the blood stream, possibly by way of the anterior ethmoidal vein. It would appear that even abscesses in the frontal lobe frequently give rise to no localizing signs in this silent area of the brain. It is therefore interesting to note the occurrence of Jacksonian attacks in connexion with an extradural abscess in this region. A possible explanation is suggested by the microscopical examination of the frontal lobe in Case II—namely, that a non-infective inflammatory reaction is set up in the cerebral tissue adjacent to the extradural abscess, and causes the motor phenomena.

CASE I

E. S., male, aged 9½ years, was seen at Moorfields on July 27th, 1933, and was referred to the Central London Throat Hospital. Previous history: nothing of note. Present history: patient was quite well until July 20th, on which day he swam twice. It was noticed in the evening that he looked slightly flushed. On July 21st he was kept in bed, but was not complaining of anything. On July 22nd the patient felt better and got up. On July 25th he complained of pain in the right eye and round the right cheek. He went to the seaside and bathed; afterwards he was languid. On July 26th a slight swelling of the upper right eyelid was noticed. On July 27th the swelling of the eyelid had increased, and he was drowsy.

On examination the same afternoon the patient was found to have oedema below the right eyebrow extending on to the upper eyelid; tenderness was marked above the inner canthus. Examination of the nose showed it to be congested, but no pus was seen. On transillumination the right side was dull. An *x*-ray photograph was taken and the patient put to bed, and treatment with three-hourly cocaine and adrenaline sprays was ordered. *X*-ray report: Thickened lining membrane of both antra and of anterior ethmoids. Frontal sinuses absent. Thickened lining membrane of both sphenoids and posterior ethmoids.

On July 28th the child's condition was much the same; he was not complaining of any pain. Temperature 102°, pulse 100. At 7.30 p.m. he gave a short cry of pain, and started clonic spasms of the left side of the body, commencing with the face and spreading to the arm and leg. He vomited, bit his tongue, and breathed stertorously. The spasm became generalized and less severe. The attack was continuous, with quieter intervals, until 9.30 p.m. Lumbar puncture carried out the same evening showed cerebro-spinal fluid under pressure, but quite clear.

Operation, July 29th: An incision extending from the middle of the supraorbital ridge carried medially down the side of the nose to a distance of three-quarters of an inch below the inner canthus of the eye. The tissues were oedematous, but no pus was encountered on cutting down to the bone, the outer wall of which appeared normal. The frontal sinus was absent, but a large anterior ethmoidal cell filled with pus was found situated approximately where the frontonasal duct opens into the frontal sinus; the inner wall of this cell was intact and appeared normal. On its removal a large extradural collection of pus under considerable tension was discovered, and the dura mater was found to be thickened. The entire ethmoidal labyrinth and sphenoidal sinus contained pus. The lamina papyracea was almost entirely absent, and pus was issuing freely from the periostium of the orbit. The opening in the orbital periostium was enlarged to facilitate drainage. The wound was packed with flavine and paraffin gauze, and left widely open.

The patient made an uninterrupted recovery; the temperature, coming down by lysis, was normal on the eleventh day after the operation. He complained of diplopia for the first week; this subsequently recovered.

CASE II

L. R., male, aged 13 years, was admitted to the West London Hospital on July 12th, 1932. Previous history: nothing of note. Present history: the patient commenced with headaches and pain over the left eye on August 6th. He had been swimming and diving on several occasions during the previous week. The pain and headaches persisted, and slight swelling above the left eye was noticed on August 8th. On August 9th the patient was seen by his doctor in the evening; his temperature was 102°, and the supraorbital swelling had increased.

The patient was seen at the hospital on August 10th. Temperature 102°, pulse 120. Oedema over left frontal sinus and upper eyelid. Very tender on pressure over this region. Transillumination showed the left side to be dark. No pus was seen in the nose. *X*-ray: left frontal and ethmoid cells opaque.

August 10th, 9 p.m.: sudden onset of Jacksonian attack commenced with twitching of the face and spread down the right side to the arm, lasting one and a half hours. Operation the same evening. Left frontal sinus explored, full of pus; anterior and posterior ethmoids also contained pus. The following morning right-sided Jacksonian attacks recommenced, passing into generalized spasms and lasting two hours, when the patient died.

Post-mortem Report.—Slight cellulitis above the left frontal sinus between bone and scalp. Right frontal sinus and right ethmoids were grossly infected. An extradural abscess 1¼ in. by 1¼ in. was found over left frontal pole. Pia arachnoid over this area was purulent. The meninges over left cortex appeared to be a little more opaque and oedematous than on the right side, but there was no macroscopic purulent meningitis at the base or vortex. There was no cerebral tumour or abscess on sectioning the brain. Both maxillary antra, sphenoidal sinuses, and middle ear were clear.

Cerebro-spinal fluid was taken just before death, and it contained 150 cells, 95 per cent. polymorphs and 5 per cent. lymphocytes. Section of the cerebral cortex well away from the lesion in the frontal lobe showed well-marked inflammatory reaction.

For permission to report Case I I am indebted to Mr. Gill-Carey, and for Case II to Mr. Hamblen Thomas.

DOUGLAS Y. RICHARDSON,
Late House-surgeon, Central London Throat Hospital.

TRAUMATIC RUPTURE OF THE HEART WITHOUT EXTERNAL INJURIES

In the *Journal* of November 24th Dr. H. O. Gunewardene records a very interesting case of traumatic rupture of the heart without external injuries, death taking place ten days after the accident. The circumstances of the case are certainly unique.

The following case is similar in some respects; but, the violence being more severe, the damage to the heart was more extensive and death took place immediately.

In 1922 the body of a girl, aged 7 years, was brought to the Cumberland Infirmary, Carlisle, by the driver of a Daimler car, who stated that a front wheel of the car had passed over the child's chest. External examination revealed a slight abrasion on the forehead, but nothing more.

At the post-mortem examination all the ribs were found to be intact; the left pleural cavity contained approximately 24 oz. of blood; the pericardium was split longitudinally on the left side and both ventricles were ruptured, the right one to a greater extent than the left.

Both cases illustrate the very marked resilience of the ribs in young children, which permits of extensive internal damage without fracture of the ribs taking place.

Southport. J. A. HAMILTON, M.B., Ch.B.

Reviews

SIR ROBERT MORANT

The publication of the life of Sir Robert Morant is a little belated, and the book itself more than a little disappointing. *Sir Robert Morant: A Great Public Servant*,[1] by Bernard M. Allen, LL.D., is not without its merits. It is interesting almost throughout, and is written in a clear, straightforward fashion. Excellent use has been made of correspondence placed at the author's disposal, and the earlier chapters contain an account of formative experiences which were hitherto very imperfectly known even to many of Sir Robert Morant's acquaintances and associates with him in his later work. Nevertheless, the author, though he clearly realizes that his subject is a great one, scarcely ever rises to the height of his opportunities, seems to lose a sense of proportion, and does not succeed in presenting that vivid, impressive, and inspiring picture of the man that many had been hoping for. It must be admitted that the life of a civil servant can never be very easy to write. His own personal official work is necessarily merged in that of his Government Department as a whole, and can be known in full and in detail only to a small company of fellow administrators and to the succession of Ministers whom he serves. A great civil servant is perforce immersed in his job, and, by the traditions of his profession, takes but a relatively small and reserved part in other public activities. Sir Robert Morant's surpassing qualities as a civil servant, and his greatness as a man, penetrated this screen to an extent much more than is usual, but the limitations are still there for a biographer to surmount. Dr. Allen has not surmounted them: perhaps no one could in any adequate degree. There is one passage beginning on page 202, just too long to quote conveniently, which catches fire and illuminates the portrait of a resplendent character; and the author quotes a little later a letter from Mr. Augustine Birrell which, in the circumstances in which it was written, constitutes a fine tribute to the unique position which Sir Robert Morant had attained in the Civil Service; but we doubt whether anyone who did not know Morant would gather from this book an accurate appreciation of his outstanding personality.

To medical readers certainly, and probably to others, Dr. Allen's perspective will seem perplexing. His biography follows in due order the four periods of his subject's activities—childhood and youth, Siam, education, public health. Morant was officially connected with the Board of Education for nine years, though, of course, for a few years previously he had been associated in several capacities with educational administration. He was chairman of the National Health Insurance Commission for England, and afterwards permanent secretary to the Local Government Board and to the Ministry of Health (when established) for eight and a half years in all. Dr. Allen devotes 173 pages to Morant's educational work, and forty-five to his work for public health. This last section of the book is not inaccurate, and mentions many of the salient points requiring notice, but it fails to bring out the full significance of the final phase and the position this held in Morant's life-work as a whole. The present reviewer happens to have been associated with Morant, not exactly intimately, but in a not unimportant fashion, both in his educational aims and struggles and in those connected with his visions of an efficient and complete public health service; and great as he knows Morant's devotion to the former to have been, he can testify that the latter were no less dear to his heart and part of his life. Even in the educational chapters of the book the author seems to be occupied unduly with a history of the developments of educational administration somewhat to the obscuring of what should have been his main theme. The exposition is well done and is quite interesting to those who had some part in the movement. It is true, too, that Morant was one of those men who, with a sacrificing zeal for his vision and ideal of the public good, combined a care for detail and a driving force of an altogether exceptional character. But some of the minutiae relating to the Cockerton judgement and other matters of but little present importance could well have been spared to make room for a fuller account of Sir Robert Morant's activities in his strife for an effective medical service.

Yet we would not seem unappreciative of Dr. Allen's service in producing this book. It is almost certainly the best presentation we shall now have of Morant's life and work. If his personality is not set forth so completely and vividly and proportionately as we could wish, it is still there. Those who knew Morant personally will like to have it, and will be grateful for facts of which they had not previously been aware, and for glimpses which they had not hitherto been privileged to obtain. To them a fuller portrait of the man might have been welcome, even if it had revealed some of his minor faults, mostly endearing, but occasionally exasperating. To others, perhaps, no biographer could succeed in conveying a real sense of the greatness of a man with whom in his lifetime they had not even a passing acquaintance.

[1] *Sir Robert Morant. A Great Public Servant.* By Bernard M. Allen, M.A., LL.D. London: Macmillan and Co. Ltd. 1934. (Pp. 311. 12s. 6d. net.)

NEWER OPHTHALMOLOGY

The third edition of *Recent Advances in Ophthalmology*,[2] by Sir Stewart Duke-Elder, is to all intents a new book. It might fairly be described as a volume in succession to the previous editions in its record of continuous research and current work. The opening chapters deal with the intricate and fascinating problems of the vascular circulation, the intraocular fluid, the vitreous body, and intraocular pressure. The chapter on the vitreous shows how far apart are modern views of the structure of this glistening jelly and the part it plays in the economy of the eye from the old idea that it was no more than a convenient packing material. Under the heading of tumours there is a good account of the radiation treatment of intraocular neoplasms. In the chapter on the cornea there is a critical summary of the recent development of keratoplast, interest in which has been so much stimulated by the work of Tudor Thomas. There is also a discussion on the value of contact glasses in cases of corneal astigmatism so extreme that correcting by spectacles is of little value, and their occasional utility in the treatment of degenerative keratitis, severe corneal ulcers, and in plastic operations. The author gives a first-class review of the several methods of operating for the reduction of detachment of the retina.

"At the moment most of these procedures are too recent to allow any final verdict upon them; they are still in the experimental stage. . . . As the position stands, it is probable that the ideal operation has not yet been devised. The impetus to new work which the initial success of Gonin's procedure provided has not yet been expended, and further developments will without doubt arise. So far as the ultimate results of these operations are concerned, nothing can yet be said. The position may be summed up by saying that the prognosis of a detachment of the retina is always grave,

[2] *Recent Advances in Ophthalmology.* By Sir Stewart Duke-Elder, D.Sc., M.D., F.R.C.S. Third edition. London: J. and A. Churchill, Ltd. 1934. (Pp. 434; 150 figures, 3 plates (2 coloured). 15s.)

but in the case of recent detachments with small and few accessible retinal holes in a relatively healthy eye it is brighter to-day than it has ever been."

By the ability and willingness of the author to gather together an immense amount of material, sift it out, and present the substance of it all in a comprehensive form, he has rendered yeoman service to his colleagues.

BACTERIOLOGY

Textbooks of bacteriology which prove useful to successive generations of students have a tendency to grow bigger and bigger with each new edition. This has been noticed in the work originally written by Hiss and Zinsser, and now brought up to date again by Dr. HANS ZINSSER with the assistance of Dr. STANHOPE BAYNE-JONES.[3] The book is well known in this country, more perhaps as a reference work for laboratory workers than for students preparing for examinations. Since the last edition was published two years ago bacteriological research has been particularly fruitful in two directions. In the first place, there has been a rapid increase in our knowledge of ultramicroscopic viruses. The different way in which viruses may be studied and the immunological reactions which they induce are described more fully in this than in previous editions. The second direction in which bacteriological ideas have developed has been in the study of bacterial variability. This has unexpectedly brought to light curious examples of dissociation of pathogenic and non-pathogenic strains. This question also is discussed fully in the new edition of Zinsser's textbook.

In order to make room for the new material the chapters on the bacteriology of milk, water, and soil have been eliminated. This sacrifice seems at first sight to deprive the book of some of its usefulness, but we notice that a good many paragraphs on milk, water, and the soil have crept unobtrusively into the chapters in the section on the general biology of bacteria. As in previous editions, the illustrations are excellent, the references are generous, and the index accurate.

MEDICAL PSYCHOLOGY

A translation into English of Dr. KRETSCHMER'S *Text-Book of Medical Psychology*[4] will be welcomed by psychiatrists in this country. In his introduction the author observes that the more subtle-minded physician is aware of a double lacuna in his professional training; his primary need is for a psychology derived from, and applicable to, the science and practice of medicine. But, over and above this, his desire to possess a psychology often arises from a vaguely apprehended urge to extend his field of vision beyond the four walls of his narrow profession into the vaster realm of mind, and consider the problem of epistemologym ethics, and the evolution of the life of the race in such a way as to effect a satisfactory synthesis between the science of medicine and a true science of mind. Many members of the medical profession in this country would agree with Dr. Kretschmer's suggestion that the medical curriculum should be infiltrated throughout with psychological teaching.

This work is divided into five sections, dealing respectively with the psychic functions and their anatomical and psychological basis, the psychic apparatus and its evolution, instinct and temperament, personality and reaction types, and practical psychotherapy. Dr. Kretschmer insists that psychotherapy is a matter not only for specialists but equally for the medical practitioner. In innumerable cases, he maintains, the physician is called, not because a complete cure is either necessary or possible, but in order to help the patient and his family to surmount the negative affect arising out of the illness—hypochondria, worry, uncertainty, despondency. Many doctors are in possession of considerable psychological insight, but in others this is entirely lacking. It would thus seem to be most desirable that the general practitioner during his student days should have "absorbed into his very blood stream the most important rules governing the psychological handling of his fellow men."

If it were felt that the medical curriculum should include instruction in medical psychology it would seem that such instruction might well be on lines similar to those suggested by Dr. Kretschmer in his admirable book.

BILHARZIA DISEASE

Dr. RAMESES GIRGES, author of a monograph on *Schistosomiasis* (*Bilharziasis*),[5] is a surgeon at Tanta, the centre of "the biggest endemic area of schistosomiasis in the world." Only one experienced in Egyptian hospital practice can adequately portray the suffering and misery, the devastating tissue destruction, the human abasement, produced by this formidable disease. It has been appropriately called "our universal scourge" (Madden). Repeated reinfection from infancy causes chronic illness involving years of disablement and degradation, and we must now add Egyptian splenomegaly to the list of bilharzia evils.

This carefully prepared and presented monograph records original work of great biological and clinical interest, carried out by the author, who has made the fullest use of his exceptional opportunities: but it is a little unfortunate that he has wrapped up his argument in a volume which contains so much other work which is classical and well authenticated. If Dr. Rameses's theory of unisexual infection by *Schistosoma mansoni* finds general acceptance a most important "forward step" in our conception of the bionomics and bionosis of bilharzia must be registered. The work, written in English and published in London, merits sympathetic and considered judgement. Speaking generally, the English does credit to the author, though European names are sometimes spelled wrong, and such words as cacogeusia, polydipsia, anaemating, and expressions like autochthonous infection might be replaced by simpler phraseology. Rameses's disease, masculine mansoniasis, and shaafa schistosomial splenohepatomegaly appear to be new names. We notice also the sentence "his studies were carried out in Egypt which had its origin in the courtyard of the Kasr-el-Aini Hospital in December, 1919."

The monograph is well arranged in ten parts. Part I (historical) appears overburdened with quotations, which destroy the even flow of the narrative. The items taken from the writings of Professor A. Looss tend, unnecessarily, to emphasize the bilharzia errors of a parasitologist who will be remembered gratefully by Egyptians for his work on ankylostomiasis: truly "the evil men do lives after them . . ." Part VII deals with the author's theory, which he announced in the *Lancet* of April 20th, 1929—namely, that the clinical aspect of *Schistosoma mansoni* presents two distinct types—intestinal and visceral (hepatic), the visceral being Egyptian splenomegaly.

[3] *A Textbook of Bacteriology. With a Section on Pathogenic Protozoa.* By Hans Zinsser, M.D., and Stanhope Bayne-Jones, M.D. Seventh edition, rewritten, revised, and reset. London and New York: D. Appleton Century Company Inc. 1934. (Pp. 1,226; 174 figures. 30s. net.)

[4] *A Text-Book of Medical Psychology.* By Dr. Ernst Kretschmer. Translated with an introduction by E. B. Strauss, M.A., M.D., M.R.C.P. London: H. Milford, Oxford University Press. 1934. (Pp. 274. 15s. net.)

[5] *Schistosomiasis* (*Bilharziasis*). By Dr. Rameses Girges. With a foreword by Professor Ernest Carroll Faust. London: John Bale, Sons and Danielsson Ltd. 1934. (Pp. 527; 183 figures. 25s. net.)

Authorities incline, no doubt, to the opinion that Egyptian splenomegaly is a schistosomatic infection: Dr. Rameses advances a reasoned statement in support of this view. Having established its aetiology the author formulates his conception of the origin of Egyptian splenomegaly, the "syndrome which for a long time was obscure": male cercariae (issuing from a single snail or snails producing the same sex), reaching the liver, grow into immature males; finding no, or insufficient, females, they remain in the liver, their presence provokes an immunity preventing the arrival of other parasites, and the case is still a masculine infestation. Intestinal symptoms remain negligible. The toxins excreted by the males produce the lesions in liver and spleen. The author writes with great confidence, and finds biological, pathological, and clinical evidence in support of his thesis.

Parts IX and X—devoted to treatment, specific and prophylactic—are excellent. It being impossible to exterminate the carrier snails, an increase in the number of mobile hospitals offers the most hopeful measure. The hospital doctors, in the author's opinion, should be prohibited private practice, and morning and afternoon injections should be instituted, in order to treat the greatest possible number. The staff should be permanent and experienced, and be paid adequate salaries. Medical and surgical measures are discussed, and the great efficacy of antimony tartrate confirmed. "Tartar emetic has no disadvantages if given with proper care." The numerous illustrations and line drawings are good, particularly the plates by the photo-offset process. The half-tones, printed on text paper, are perhaps somewhat disappointing. Figures 162, 163, and 164 show the remarkable effect of tartar emetic, testifying to the schistosomatic aetiology of Egyptian splenomegaly.

Notes on Books

The call for a second edition of BOYD'S *Text-Book of Pathology*[6] within the comparatively short interval of two years has given the author the opportunity to arrange the subject-matter of the sections on general pathology in a more logical order. After discussing degenerative conditions, the subject of circulatory disturbances, especially those of histamine shock due to tissue injury, leads up to the subjects of inflammation and repair, whilst immunity, allergy, bacterial infections, and animal parasites follow in logical sequence, and disorders of growth are placed in relation with tumours. Several of the sections dealing with these subjects have been rewritten. A new chapter has been added on dental pathology, and among other new material may be mentioned sections on trauma, von Gierke's glycogen-storage disease, lead poisoning in children, the localization of infection, rhinosporidiosis, Oroya fever, the causation of anginal pain, duodenitis, stasis of the gall-bladder, renal infantilism, and Cushing's work on basophilic invasion in hypertension. More than a hundred new illustrations have been added. These changes will enhance the value of the book to students of medicine, for whom the work is primarily intended.

Ronald Ross: Dragon Slayer[7] is a sympathetic account of the discovery of the part played by the mosquito in malarial infection written by Mr. J. O. DOBSON, who first met Sir Ronald Ross in 1917 as a consultant in malaria at Taranto in Italy during the war. In addition to his work, Ross's life is pleasantly sketched in the last chapter, entitled "The Hero as Scientist." The words "dragon slayer," which are perhaps somewhat dramatic, are taken from the *Times* of September 17th, 1934. It is appropriate that this little book should appear in the same year as the union of the Ross Institute with the London School of Hygiene and Tropical Medicine, a description of which is given by Sir Malcolm Watson in the Introduction.

A new and revised edition has appeared of Dr. WARREN T. VAUGHAN'S book on *Allergy and Applied Immunology*.[8] The subtitle of this work, which was reviewed in these columns on its first appearance three years ago, is: "A handbook for physician and patient, on asthma, hay fever, urticaria, eczema, migraine, and kindred manifestations of allergy."

The two chapters in *To Remind: A Biological Essay*[9] are the only records which illness allowed the late Sir WILLIAM HARDY to finish of the informal lectures he delivered at Vanderbilt University in February and March, 1931, as the second holder of the lectureship endowed by Mr. Bernard Flexner to commemorate the services rendered to the Medical School in its reorganization and development by Mr. Abraham Flexner. Hardy was a genius with a wide and exceptional knowledge of biology and physical chemistry, and in a brief but masterly survey he starts with Dujardin's discovery in 1835 of sarcode, afterwards called protoplasm by Moll, and carries the subject up to "the modern period in which the physical and organic chemist has taken possession of biology." Of the great problem of the origin of life he says "the most striking feature is its improbability"; and later "to follow the chemistry of life is like treading a maze where the paths twist and turn . . . but the pattern is, so far as human experience goes, fixed for all time." Pasteur's work on molecular asymmetry and its relation to the origin of life were discussed at some length, and he inclined to the belief that the hypothesis of special creations is almost as valid as that of continuous evolution.

Drs. D. SANYAL and R. GHOSE have just published a second edition of their volume *Vegetable Drugs of India*.[10] The book gives a full account of the reputed medicinal properties of some hundreds of indigenous Indian plants. In each case the Latin name is given, followed by a list of the commoner vernacular names, together with a description of the plant and an account of its reputed actions and uses, while in many cases a special paragraph is added mentioning the Ayurvedic uses. The volume therefore constitutes an excellent work of reference for those who desire to obtain information about the reputed therapeutic properties of Indian plants.

[6] *A Text-Book of Pathology*. By William Boyd, M.D., F.R.C.P. Second edition, thoroughly revised. London: H. Kimpton. 1934. (Pp. 1,047; 416 figures, 8 coloured plates. 45s. net.)

[7] *Ronald Ross: Dragon Slayer. A Short Account of a Great Discovery and of the Man who made it*. By J. O. Dobson. London: Student Christian Movement Press. 1934. (Pp. xiii + 112; frontispiece and 2 figures. 3s. 6d. net.)

[8] London: H. Kimpton. 1934. (Pp. 420; 23 figures. 21s. net.)

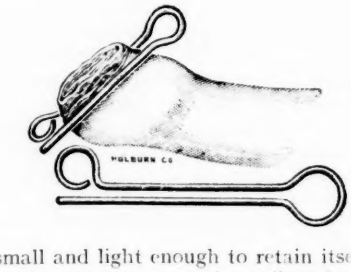
[9] *To Remind: A Biological Essay*. By Sir William Bate Hardy, LL.D., D.Sc., F.R.S. The Abraham Flexner Lectures, Series No. 2. Baltimore: The Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1934. (Pp. xi + 45. 4s. 6d.)

[10] Calcutta: S. Chatterji. 1934. (Pp. 590. Rs. 4/8.)

Preparations and Appliances

CIRCUMCISION CLIP

Dr. BENJAMIN BEST (Liverpool) volunteers a description of the small spring clip illustrated here. Advocating its adoption in practice, he writes: I use it instead of the usual circumcision



shield. It is small and light enough to retain itself in position, and has no moving parts, yet it is easily adjusted to allow the correct oblique cut to be made. It was made at my suggestion by the Holborn Surgical Instrument Company, Ltd., London, at an extremely moderate cost.

THE MARIE CURIE HOSPITAL

PRIME MINISTER'S TRIBUTE

The drawing-room at No. 10, Downing Street was crowded on December 6th for a meeting in support of the Marie Curie Hospital at Hampstead. The Prime Minister, who presided, paid a tribute to the genius of the late Mme Curie, a lady, he said, of great personal charm, vigorous intellect, and one who seemed able to find her way by instinct through the intricacies of the science of chemistry. It was good to have her name associated with a hospital, not a merely sentimental memorial but a severely useful institution, staffed by women of great medical and scientific capacity. Its history, though brief, was sufficient to show how sound and purposive was its work. The Medical Research Council had the fullest confidence in it, and, having been given by the War Office a certain amount of radium which was used for gun-sights during the war, the Council had handed over a substantial proportion, though actually amounting only to a small quantity, to the workers at the Marie Curie Hospital.

LORD HORDER'S SPEECH

Lord Horder said that the disease of cancer, which the Marie Curie Hospital set itself to combat, was by far the greatest of the remaining problems of medicine, and was still in many of its worst aspects unsolved. This hospital dealt only with cancer in women, and, in the way of treatment, only by irradiation. He had been since its inception a member of the British Empire Cancer Campaign, and was now chairman of its scientific advisory committee, whose chief function was to select institutions and individuals for the disposal of such funds as the public bestowed. The confidence which this important body felt in the Marie Curie Hospital was shown by the fact that ever since the hospital was founded in 1929, and for five years before that, when the preparatory work was being done by a cancer research committee of the London Association of the Medical Women's Federation, the Campaign had made grants, totalling now to £5,340, together with the loan of radium of a value approximately of £3,000. The days had gone by, Lord Horder continued, when radium or other treatment could be used with reckless empiricism in regard to technique—had gone by, at least, except in the ranks of quacks, and the quack, he supposed, must remain so long as some of the British public thought it a finer thing to work on disease without expert knowledge than with it, and that because a man was not qualified therefore he must be exceptionally clever. The technique of radium, as also of *x* rays, had become in itself an applied science. He had always thought that there was a great sphere for women in medicine—and that, of course, was now beyond discussion—but he could not help feeling that there were certain spheres in medicine, particularly in therapeutics, in which women showed an exceptional bent, and were able to produce specially good results. Whether it was that women were more painstaking, or were more accustomed to attention to detail as part of their daily routine, the fact remained that in this particular branch of treatment they did excel, and there was definite evidence that they got their results, not by the application of different principles from others, but by the more careful application of the same principles. In a summary by the Medical Research Council of the results of radium treatment of cancer of the uterus, results from seven different institutions were tabulated, and although the names were not stated he knew which of those institutions was the Marie Curie because the figures coincided with those given in the report of the British Empire Cancer Campaign under the name of that hospital. In the other six institutions the average percentage of cures in the first and second stages of the disease was 50 per cent., and at Marie Curie 83 per cent., while for the third and fourth stages the other institutions gave an average percentage of cure of 27 per cent., and Marie Curie 40 per cent. The cases were of the same type, the disease was at corresponding stages, the same principles of treatment were applied, and the answer to the question as to why the results were so different was to be found, he believed, in the fact that this was one of those spheres of treatment in which scrupulous care and observation during and after the application made considerable difference to the eventual result.

METHODS AT THE MARIE CURIE HOSPITAL

Miss Louisa Martindale, honorary surgeon at the hospital, said that over 1,000 cases of cancer of the uterus had now been treated, a special study being made of cancer of the cervix with a modification of the treatment first elaborated by Heyman of the Radiumhemmet, Stockholm. The success in treatment was apparently due to team work and perhaps superior asepsis. The application of the radium was made by the surgeon herself, the technique was controlled by the pathologist, and the screen and measuring of the dosage by the physicist, the director examining every patient and being present at a great number of the treatments. The follow-up was regularly done, and the nursing was also carefully supervised. In January last a new *x*-ray department was opened, with an apparatus capable of generating 300,000 volts. It employed a modification of Professor Henri Coutard's method—a long, fractional treatment extending over two or three months for each patient. To treat all patients adequately at least four more cubicles were needed, with consequent extension of plant, or alternatively a one- or two-gram bomb of radium. Out of 997 patients with uterine cancer treated since 1925 88 per cent. of the early operable cases and 79 per cent. of the borderline cases were living and well. It was now becoming possible to compare the five-year survival rate with that of other leading clinics, and the results were most encouraging. A higher percentage living for five years could be reported than in any other international clinic except Paris, whose figure was equal to that of the Marie Curie in London.

ROYAL SURGICAL AID SOCIETY

The seventy-second annual meeting of the Royal Surgical Aid Society was held at the Mansion House on December 10th. The Lord Mayor (Sir Stephen Killik), who presided, referred to the resignation of the society's senior surgeon, Mr. E. Muirhead Little, who has served the society for thirty-nine years. He was very glad to state that Mr. Little would retain his connexion with the work as honorary consulting surgeon and as a member of the committee. The income for the past year showed a slight fall, mainly due to a decrease in special donations, although the patients' own payments showed an increase of almost £1,300. Nearly 30,000 cases had been relieved during the year, and 36,000 appliances supplied. These appliances included over 7,000 trusses, a similar number of stockings and knee-caps, more than 3,000 abdominal belts, and about the same number of pairs of spectacles. The Lord Mayor said that the society had won public confidence for itself, and the gratitude of patients was abundant. The work already accomplished was its best appeal for continued support. Mr. Sheriff Twyford and Dame Beatrix Lyall spoke in support of the work. Mr. Girling Ball moved a vote of thanks to the surgeons—Mr. Muirhead Little, Mr. E. Laming Evans, and Mr. B. Whitchurch Howell—and paid a high tribute to Mr. Little's services, which had extended over more than half the period of the society's existence. To fill the vacancy on the surgical staff caused by Mr. Little's resignation, Mr. Cecil Flemming has been appointed. Mr. Laming Evans acknowledged the vote of thanks on behalf of the surgeons. Donations to the amount of about £200 were announced at the meeting.

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SATURDAY, DECEMBER 15th, 1934

THE ENDOWMENT OF CLINICAL SCIENCE

In his Presidential Address delivered before the Royal Society at their anniversary meeting, Sir F. Gowland Hopkins dealt at some length with the subject of clinical science and its endowment. He was glad to recognize that practice in the wards and activity in the laboratory, which but a generation ago made few contacts, have now come into close relations with a degree of mutual respect that was perhaps lacking in the past. But he suspects that some clinicians fear that the introduction of multitudinous laboratory methods into the domain of diagnosis is tending to destroy the true clinical art. We should prefer to say that the risk lies in undue dependence on laboratory tests to the neglect of clinical observation, instead of the co-ordination of both methods of attack. Apparently Sir Gowland Hopkins is somewhat alarmed by the claim that distinct from all the laboratory science that is ancillary to medicine there is clinical science *sui generis*, the progress of which depends on the direct and intimate study of disease as manifested by human beings. It might, however, be considered that the claim was rather that in addition to the help of laboratory methods the clinical evidence should be assessed with the same exactitude, as far as possible, as those methods demand.

Sir Gowland proceeds to consider the three main activities of clinical science as defined by Sir Thomas Lewis. The first is the "discovery of disease," or the clear description of specific diseases or states, so that these may be identified by others. This conception of disease as an entity is submitted to an illuminating criticism from the historical standpoint in the presidential address. He shows clearly how the pendulum has swung through the centuries: at one time the centre of interest is the patient who has the disease; at another, attention is focused on the disease which the patient has. While admitting that the conception of individual maladies, however abstract such a conception might be, is essential in bedside practice, if only for clear description and guidance in treatment, he asks: Does it mean more than this? Broussais strenuously maintained that diseases are not actual entities but convenient metaphysical abstractions; that no two cases displaying certain morbid symptoms in common are ever really the same. It might be added that the popular use of the expression "an attack" of a disease bears witness to the deeply ingrained conception of its being something imposed upon the organism from without, instead of the more scientifically accurate view of its being the reaction of the organism as a whole to some change in its external or internal environment. It must be admitted that so far Sir Gowland Hopkins has the best of the argument, for at the moment the philosophy of "holism" is in the ascendant. Sir Thomas Lewis's second category comprises experimental work on clinical cases. The method of controlled experiment, wherever it can be applied, is a shorter route to knowledge than the slow path of recorded observations. So far as it can be applied at the bedside, to pursue it there to-day is one of the most praiseworthy of scientific aims, there being, of course, no thought of experiments which can do harm to the patient. Sir Gowland's opinion is that the fields in which really controlled experiments can be carried out on the intact human body are limited, and he feels that the same difficulty applies to Sir Thomas Lewis's third category—the application of physiological discoveries to human material. While appreciative of the great services to knowledge that have been rendered by Dr. J. S. Haldane's applications of this method, he is nevertheless of the opinion that "anyone who has followed the progress of physiology during the last twenty years knows that it has developed in wide fields where experiments on the intact body of man could have had no possible application." Therefore, while bearing testimony to the brilliant work of such men as Dr. Edward Mellanby and Sir Thomas Lewis as illustrating the interaction of clinical and experimental study, he harbours a suspicion that experimental fields for clinical science are relatively few. On the other hand, he is sure that there are many very wide fields in laboratory science the cultivation of which will continue to benefit medicine, and that the pursuit of pure science may at any time contribute to unexpected progress in entirely new directions. Since this has been so in the past, that is a fairly safe deduction for the future.

These criticisms demand serious attention, especially as they come from one whose own purely laboratory work has opened out entirely new fields in nosology and treatment. No man has done more than the President of the Royal Society to place the conception of deficiency diseases on a sound basis. Moreover, there is a disarming moderation in the whole tenor of his remarks which adds weight to them. But he goes on to say that he has sensed the beginnings of a definite movement, not, of course, to ignore the laboratory, but in the distribution of funds provided for medical research to endow the clinic on a scale which might endanger the future of research in fundamental biological science. This, he is convinced, would in the long run sterilize advance. Here we think Sir Gowland shows an unnecessary fear. We have indeed heard exactly the opposite criticism made as to the distribution of funds specifically ear-marked for medical research—namely, that too much goes to subjects of which the medical aspect is somewhat remote. It may be hoped that when competent authorities express diametrically opposite views the conclusion may fairly be drawn that a safe middle course is being successfully steered. Clinical research may be difficult, and few

may be adapted for it, but the very instances Professor Hopkins quotes in his interesting and thoughtful address encourage us to feel that when its technique is more fully grasped it will yield more results of equal value. In the meantime, there fortunately seems little fear of pure scientific research being neglected or starved in comparison.

THE NATION'S CHILDREN

The school medical service for England and Wales is responsible for the health of approximately five million children. Of this school population between 70 and 80 per cent. are normal children, and it is a feature of Sir George Newman's report for 1933[1]—a summary of which appears at page 1115—that he urges fuller concentration on the legitimate claims of this section. "Are we," he asks, "doing all that is practicable for the nutrition, physical education, nurture, and health of the normal child?" And he answers himself emphatically: "I fear we are not." This is a clear admission that to some extent the public health authorities of this country are failing to ensure the physical health of the normal child under 14 years of age. All complacency that things are much better than they were twenty-five years ago will not counteract this admission, and it is clear that medical science has not yet entirely succeeded in translating its discoveries and advances into practical measures in the homes and in the schools. There is a "lag," as Sir George Newman himself pointed out in another report, and it is true to say, as he does on this occasion, "there are signs of public anxiety on this subject."

With this introduction the Chief Medical Officer to the Board of Education plunges straightway into the vexed question of nutrition and school feeding, and the intelligent reader of this chapter will find it difficult to get into clear perspective the issues that are raised. The term "malnutrition" is of comparatively recent origin in these reports, and it is clearly stated that as used by school medical officers it "should include only the children whose nutrition was reported as 'bad,' prolonged, or serious undernutrition." On this strict basis the returns for 1933 include 20,579 children found to be malnourished and requiring treatment, and a further 23,760 also returned under the "malnutrition" heading as requiring "observation." At this point it is pertinent to ask how "observation" of children in this badly nourished category is going to help. Moreover, these are the returns of the routine inspections in the specified age groups. To them must be added the results of special inspections—namely, 19,400 children with malnutrition requiring treatment, and 8,407 children in the same category requiring observation. On this basis there are over seventy thousand children in the public elementary schools of England and Wales with bad, prolonged, or serious undernutrition, half of whom may possibly, since only observation was considered necessary, be included in some less well-defined "subnormal" category. On this Sir George Newman comments that in 1933 there was no general or widespread malnutrition among children attending public elementary schools. Since the proportion for the whole five million is somewhere in the region of 1.4 per cent. such optimism is, perhaps, justified, but it must surely mean that in those areas where there are admittedly "patches of serious undernutrition," areas where there is also "evidence of a slight increase in undernutrition," things cannot be quite as rosy as the general tenor of this chapter might lead one to suppose. Fortunately there was a substantial increase in the number of school meals provided in 1933, amounting to over 6,500,000 in round figures, and the scheme of the Milk Marketing Board, which came into operation on October 1st, may be expected to make some differences in the next report. The method of selecting children for school meals is another vexed question which has been frequently discussed in these reports. It is again asserted that the provision of free meals (including milk) must only be allowed through a system of selection by the school medical officers, and while this should secure that available funds are used for the children most in need of extra nourishment, it still appears to be regrettable that the teacher is not allowed more responsibility in choosing children for such help, since school meals are undoubtedly intended, in the words of the governing Act, "for children who are unable, by reason of lack of food, to take full advantage of the education provided for them."

In another section of the report Sir George Newman's stress on the importance of physical education and hygiene, more especially for the well-being of the healthy child, will be applauded by those whose daily work brings them more especially into contact with the adolescent. The new syllabus of physical education, issued in the autumn of 1933, has attained the sales of a best-selling novel, and there are hopeful signs of a new eagerness in securing the "mental and spiritual" benefits which physical training on a sound physiological basis must bring. "Games are not enough" is a phrase for which we must be grateful. Sir George Newman wisely points to the State efforts of other countries in preserving and maintaining adolescent physique, although there are many products of voluntary aspiration and effort available in this country for those who can make use of them. The open-air school is another adjunct towards preserving health as distinct from treating disease to which the present report directs special attention, but there are only 146 schools available, and the local authorities are clearly urged to a greater extension and practice of the principles upon which these institutions are based. The third point upon which emphasis is laid is effective training in hygiene, to which last year's report gave great attention. The "habits of health" which it is desired to encourage will do much to carry the advantages received in school into adolescence and adult life. It is this aspect of the health and well-being

[1] The Health of the School Child. Annual Report of the Chief Medical Officer of the Board of Education for the year 1933. H.M. Stationery Office. (3s.)

of the nation's children which is of the greatest importance. Open air, physical training, and hygiene can build a nation of healthy adults, always providing that the children are maintained in such a state of nourishment as to be able to benefit by them.

TUBERCULOUS RHEUMATISM

The problem of whether the tubercle bacillus can give rise, on the one hand, to a symptom-complex clinically indistinguishable from acute rheumatic fever and, on the other, to a chronic non-suppurative polyarthritis resembling rheumatoid arthritis has been attracting much attention during recent years. The evidence for and against is very fully marshalled and examined by Drs. Brav and Hench in the October number of the *Journal of Bone and Joint Surgery*. The idea has received little support in this country ; but abroad, and especially in France, many physicians of the highest repute as clinicians now admit that chronic polyarthritis may be tuberculous in origin. The subject was extensively discussed at the third International Congress on Rheumatism, held in Paris in 1932. Reitter and Löwenstein claim to have isolated the bacillus of Koch from the blood stream in a considerable number of cases of rheumatic fever by a special method of culture which they have devised, and their work gave a fresh stimulus to the subject. Many other workers have investigated cases by this method with varying results, but the majority have failed to confirm these findings, while several observations have been recorded in which the bacillus has been cultured from the blood in conditions definitely not tuberculous, and in some of these post-mortem examination revealed no evidence of tuberculosis in the body. It must be admitted, therefore, that the discovery of acid-fast bacilli in the blood stream of rheumatic patients cannot be accepted as proof that the rheumatic symptoms are of tuberculous origin. Many cases have, however, been recorded of chronic polyarthritis in which acid-fast bacilli have been isolated from the synovial fluid, and others in which microscopical examination of synovial tissue obtained by biopsy has shown histological appearances considered to be tuberculous. These appearances did not include actual tubercles or giant cells, but a preponderance of large endothelial cells together with swelling and vacuolation of the intima of the small arteries. Cases in which giant cells and other characteristic lesions are observed must be regarded as true tuberculous arthritis as distinguished from the so-called tuberculous rheumatism. Accounts have been given of cases of chronic polyarthritis in which one joint has developed into typical "white swelling," and have been cited as evidence of the tuberculous origin of the whole disease, but it would appear probable that a secondary infection with tubercle bacilli had been implanted on the original joint disease. True tuberculous rheumatism is believed to be due to an attenuated form of the bacillus, possibly the granular filter-passing form demonstrated by Mellon and Fisher, among others. Calmette and Valtes state that synovial effusion appears to be caused by "ultravirus," and many other workers have shown that if guinea-pigs are inoculated with this attenuated form or with material from the joints affected with tuberculous rheumatism glandular enlargement results, but only after some months ; and this effect is overlooked if the animals are killed after a month or six weeks, as is the usual practice. If this glandular material is inoculated into other guinea-pigs, after one or two passages typical lesions are produced with acid-fast bacilli. In the endeavour to diagnose tuberculous rheumatism cutaneous tests are unreliable, since they indicate nothing more than the existence of a focus somewhere in the body, and this applies equally to agglutination and complement-fixation tests. Subcutaneous inoculation, however, of a very dilute tuberculin has in some cases given rise to focal reactions in the shape of increased joint pains, and this must carry weight. On the whole, the balance of evidence is in favour of the view that a certain proportion of cases of chronic polyarthritis are of tuberculous origin ; cautious observers place it at 10 per cent. Further investigations are required, and the subject deserves to receive more attention in this country. There will be general agreement with the view advanced by Coste, Forestier, Saenz, and Costil that the proof of tuberculous origin of a polyarthritis must depend on positive laboratory results in subjects in whom no other active tuberculous focus can be detected, and that the tubercle bacillus should be discovered in the joint fluids or in portions of tissue obtained by biopsy, or positive results obtained by inoculation of suspected material.

MENTAL STATES ASSOCIATED WITH EPILEPSY

As Kinnier Wilson has said, we ought no longer to talk of epilepsy but of the epilepsies, and if the exact pathogenesis in certain patients who exhibit this symptom cannot be elucidated, ignorance should not be cloaked by the elevation of a symptom into a disease entity. There can therefore be little justification in attempting to identify an epileptic mentality, and this is the thesis advanced by Dr. Bridge[1] in a recent article. Pierce Clark and others, however, have sought to establish an epileptic personality possessing certain constitutionally determined characteristics which in their view are responsible not only for the particular form of personality but also for the convulsive attacks themselves. It will be readily admitted that the type described by Clark as domineering, asocial, egocentric, restless, and of a violent temper does exist ; but not all such people exhibit epilepsy nor are all those who suffer from epileptic attacks of this type, though it is probably true that the two coincide quite often. Bridge quotes cases to show that these personality traits may equally be the result of the social and family disabilities consequent upon the epilepsy. Also he points out that such characteristics may wax and wane with the frequency and severity of the attacks, and may even disappear altogether if medicinal treatment leads to control of the convulsions. The mental changes, therefore, may not after all be constitutionally determined, but may represent phasic alterations in brain function dependent upon the same pathological changes—whatever they may be—that determine the convulsions. If this is so, it helps to explain the frequently observed fact that in some cases psychological treatment which succeeds in

[1] *Arch. Neurol. and Psychiatry*, October, 1934, p. 723.

improving the mental attitude of the patient improves the convulsive state as well, while in other cases medicinal treatment which improves the convulsive state will alter the personality for the better. The functional derangement of the cortex which results in the epileptic attack—with or without certain significant mental changes—may be due to all sorts of underlying causes. Where these are of far-reaching structural import there is likely to be some degree of intellectual enfeeblement. Or the derangement may be due to comparatively transitory disturbances, and here no intellectual deficiency will be discoverable, although in such cases there may be temporary mental changes simulating mental defect. Observers would be wise, therefore, not to be too dogmatic in the assertion that epilepsy is always or even often accompanied by amentia, and especial care must be taken to scrutinize the evidence of formal intelligence tests, which may be very misleading in such cases. Similarly, the effects of the disturbance responsible for the convulsion will vary considerably. In some instances permanent changes occur which lead to mental deterioration and dementia ; but in others convulsions may recur for years without inducing the slightest permanent damage in the cortex, and in these no mental deterioration ensues. Just as one must think of epilepsies and not of epilepsy, so must one think of mental changes not as necessary cause or effect of the convulsion but as a function of the cerebral disturbance responsible for both: this may or may not be associated with gross cerebral maldevelopment, and may or may not result in gross cerebral deterioration.

A FIVE DAYS WEEK

The hours of work and the use of leisure are obviously two factors which may greatly affect both individual and public health. In present-day economic conditions, especially as influenced by widespread unemployment and by the rapid mechanization of the production and distribution of goods, they have both become of vast national importance. The exploitation of leisure, especially by large interests established to make financial profit by the provision of various forms of occupation, excitement, or amusement, has so far outstripped instruction and experience in the proper use of leisure. The problems thereby raised are very serious, and some would say that they should be faced before any further attempts are made to increase that leisure. Experiments in the reduction of hours of labour have, however, been made for a long time, and careful investigations as to the results of some of them, both as to their bearing on economics and as to their influence on health, have been undertaken. The latest of such investigations is that of Sir Richard Redmayne on the experiment which Messrs. Boots of Nottingham have recently made of having only a five days working week in their main productive works in Nottingham and Beeston.[1] The report is a very interesting document, and deserves the attention of medical practitioners and public health medical officers as well as of those concerned with industry and other forms of social service. Sir Richard Redmayne reports in detail about the various departments, and his general conclusions are that the experiment " has proved an unqualified success both from the business point of view and from that of the employees " ; that the cost of production " has not been enhanced and certainly there has been attained a higher efficiency on the part of the employees " ; and that " the effects in regard to enhancement of health and contentment, regularity of attendance at work, and diminution of absenteeism have been very marked." It should be added that there has been no lowering of the weekly earnings of any employee, that overtime has been almost completely abolished, and that a holiday period with full pay is allowed each year, the duration of this period being dependent upon length of service, nature of the work, and age. Generalization from these results as to the application of a similar system to other forms of industry is obviously dangerous, but Sir Richard Redmayne indicates that " there are many works at which the experiment might be applied—at large printing works, for instance, and at works where the production and distribution are vested in the same concern and where the wages cost does not constitute a very high proportion of the selling price of the commodity."

[1] *A Review of the Experimental Working of the Five Days Week by Boots Pure Drug Company at Nottingham.* By Sir Richard A. S. Redmayne, M.Sc., K.C.B. Nottingham: Boots Pure Drug Co. 1934. (1s.)

PROPHYLAXIS IN WHOOPING-COUGH

We recently[1] called attention to the heavy incidence in England of whooping-cough in infancy and to the two or three thousand deaths that occur each year. It is now generally accepted that, to make a protective vaccine with any promise of success, it is essential to use the haemolytic " S " form of the bacillus, toxic to animals. G. S. Shibley and H. Hoelscher,[2] in their study of approximately 100 strains of *H. pertussis*, have confirmed many of the earlier observations, and have noted that the desired " S " form travels more slowly in the electric field and that its iso-electric point is at a higher *p*H. J. M. Frawley[3] and his co-workers also employ recently isolated smooth strains for their vaccine. Among 505 children vaccinated, eighty were intimately exposed to infection: forty-nine escaped entirely, while in thirty-one pertussis developed. Frawley records that the attack was mild, and in twenty-five of the thirty-one children the whooping lasted less than a week, whereas of 174 unvaccinated children who became infected 116 whooped for two weeks or longer. The results are described as " encouraging but not entirely satisfactory." Frawley, following the work of Anson and Mirsky on denaturation of proteins, attaches considerable importance to mechanical disruption of the washed bacterial cells and to filtration through collodion membranes. At no stage is heat applied. It is difficult to know what importance to attribute to these points. At one period of bacteriology high hopes were entertained that mechanical disruption of bacteria, or other methods avoiding possible denaturation, would provide antigens of unexampled effectiveness, but the harvest has not been great, and the Madsen and Sauer vaccines, which apparently gave good protection, were not thus made. Krueger[4] and co-workers record that they immunized rabbits which tolerated lethal doses of culture injected intravenously. If a parallel vaccine

[1] *British Medical Journal*, 1933, ii, 1177.
[2] *Journ. Exper. Med.*, 1934, lx, 403.
[3] *Journ. Amer. Med. Assoc.*, 1934, ciii, 960
[4] *Proc. Soc. Exper. Biol.*, 1933, xxx, 1097.

made from the same strains by the usual methods had failed to immunize, a strong case would have been made out for the necessity of the disruption of bacilli and collodion filtration. It is essential that the vaccine should be truly protective, and desirable that one should be able to test the vaccine before it is used clinically. Lawson[1] states that the toxin of smooth strains produces an intradermic reaction in guinea-pigs which is neutralizable by immune serum. If it is possible regularly to immunize animals actively—and recent work in England tends to support the results of Lawson and Krueger—the immunologist should be in a position to guarantee antigenic efficiency when he hands over a vaccine to the clinician. This desirable stage appears to be in sight, but how shall we in England test this rich hope that vaccination will protect infants? There are probably members of our Association troubled annually with outbreaks of pertussis in infants' homes under their care Is it possible to pool their opportunities?

BACTERIOPHAGE THERAPY

Among the more novel forms of treatment now being exploited commercially is the use of bacteriophage. Those familiar with the history of the subject are aware that the original startling discovery of a "principle" (whether virus or something inanimate) capable of destroying bacteria so thoroughly that they simply disappeared from cultures has had subsequent results which are more of interest to the theorist than of value to the clinician. When it was asserted that the diminution in numbers of typhoid bacilli in the faeces during recovery from enteric fever coincided with an increase in the quantity of bacteriophage, there seemed good reason for believing that the latter, if not part of the regular mechanism by which the disease is overcome, could at least be employed to partake in it. It is actually in intestinal infections, and particularly in dysentery, that bacteriophage therapy appears to breed most conviction of its utility at the present day. But this is by no means its only field. The first lytic action of this type ever recognized was observed by Twort in a culture of staphylococci, and staphylococcal infections have not escaped attention from this point of view. Those involving the skin have the great practical advantage that direct application is possible and the study of its effects comparatively simple. Jern, Howes, and Meleney[2] have treated 110 cases of furuncle and carbuncle by this method, and have investigated its effects in some detail. They found that susceptibility to lysis was unrelated to the type of staphylococcus (whether haemolytic or non-haemolytic); only three of their 110 strains proved resistant. Cultures obtained from the lesion twenty-four hours after treatment exhibited lysis; but, later than this, evidence of lytic activity diminished. The conclusion was reached that bacteriophage had not multiplied in the tissues, and far from increasing in potency, as it may *in vitro*, it "grew progressively weaker." Bacteriophage being itself antigenic, it is conceivable that antibodies to it developed by the patient may interfere with its further action; antiphage was demonstrable in the serum of some of these patients, but its existence appeared to be unrelated to the survival of bacteriophage in the lesion. If some of these conclusions are correct, and if the bacteriophage used was fully active, it is evidently misguided to expect staphylococci to be devoured in the body with the same avidity as in the test tube. These authors are commendably reluctant to pronounce in favour of this form of treatment, and propose to defer judgement until "two absolutely parallel series of cases" have been treated with and without bacteriophage. Would that all other clinical investigators followed this example.

[1] *Studies on Bacillus pertussis.* Harvard School of Public Health. 1932. Thesis.
[2] *Journ. Lab. and Clin. Med.*, 1934, xix, 1257.

THE HEALTH OF THE R.A.F.

The Air Ministry's report for 1933 on the health of the Royal Air Force[1] shows a slight increase of sickness as compared with the previous year, amounting to 53 per 1,000 of strength for cases admitted to hospitals and sick quarters only, and 76 per 1,000 for all cases of medical non-effectiveness. The greater incidence of influenza is quoted as the chief reason for the figures being larger for 1933. The incidence of deaths for 1933 was 3.7 per 1,000 of strength (3.6 in 1932, 4.1 and 4.4 for 1927–32 and 1921–6 respectively), while invalidings from the Service fell to 6.1 per 1,000 (6.8 in 1932). There was a very slight rise in the incidence of venereal disease above the lowest figure yet recorded—namely, 11.3 per 1,000 in 1932. As well as presenting a very full statistical picture of the state of health of the Service, the report deals with such subjects as the special departments, with the physical efficiency of personnel, the medical examination of recruits, the transfer of casualties by air, dental treatment, etc. In detail it makes interesting reading. During the year under review disease accounted for 82.1 per cent. of the total sickness, and injuries for 17.9 the more or less constant relation between disease and injury as a cause of sickness having thus been maintained. As regards invaliding, the same conditions—tuberculosis and psychoneurosis—proved the chief causes of invaliding from the Service as during previous years. It is also of interest to note the increase, as a cause of final invaliding, in the number of cases of mental disease, for which no reason is obvious. Two other points of note are the decrease in the number of cases of chronic suppurative otitis and the marked fall in final invaliding for heart disease as compared with the two previous years. An analysis of the fifty-one deaths from injury shows that sixteen occurred from motor accidents off duty. Among the other matters with which the report is concerned, one may pick out the following. No conclusion has yet been drawn from the incidence of pulmonary tuberculosis classified by age groups, trade groups, length of service, and type of unit. There were forty-eight deaths due to flying accidents during the year—two less than in 1932. 43 per cent. of the total flying casualties resulted in death. The nosological tables show injuries, gonorrhoea, and influenza as the chief causes of sickness.

At the distribution meeting of King Edward's Hospital Fund for London, held on December 11th, with the Prince of Wales in the chair, it was announced that £320,000 would be awarded in grants to hospitals and convalescent homes for the current year.

[1] *Report on the Health of the Royal Air Force for the Year 1933.* London: H.M. Stationery Office. 1934. (1s. 6d. net.)

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

TREATMENT OF ACUTE BRONCHITIS

BY

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Bronchitis is often regarded as a minor malady. In reality, even in its milder forms, it often involves serious risks, particularly in the early or late periods of life. The care, management, and medicinal treatment of patients suffering from it should always receive the closest attention. A common fallacy is to expect recovery in a week or less. It often lasts longer than more acute and more immediately serious conditions, such as pneumonia.

Unfortunately, although the pathological basis of bronchitis as an infective catarrhal or suppurative process affecting the bronchi is definite and clear-cut, the clinical manifestations are varied and ill defined. Clinically the term "bronchitis" comprises conditions varying from a simple mild tracheo-bronchitis to grave involvement of the small bronchioles—a condition indistinguishable at the bedside from bronchopneumonia. In discussing the treatment of acute bronchitis it is therefore necessary to make some attempt to separate different clinical forms, at the same time premising that any of the mild varieties may merge into or progress to the gravest forms. It is also necessary to point out that bronchitis is often a secondary manifestation, either as an essential feature or as a complication of many other primary conditions, such as the infectious fevers, tuberculosis, glanders, and septicaemia, or after injury, anaesthetics, or gassing. Treatment in such cases may have to be subordinated to that of the primary condition or modified in various ways.

Although the general principles of treatment in the various forms are the same—namely, to combat the cause, whether mechanical or bacterial, to treat the inflamed mucous membrane, and to promote the evacuation of the products of the inflammatory process—yet the actual treatment varies with the degree and the extent of the inflammation. With the reservation that the classification adopted is chiefly clinical and in some senses artificial, we may for convenience recognize the following varieties:

1. Inflammation of the larger bronchi, or more accurately tracheo-bronchitis.
2. Bronchitis of the medium-sized tubes.
3. Inflammation of the bronchioles.
4. Suppurative bronchitis or "suffocative catarrh."
5. Fibrinous bronchitis.

A condition of fetid bronchitis has been described, but this is in most cases due to unsuspected bronchiectasis, or to bronchitis associated with empyema, abscess, or gangrene.

Tracheo-bronchitis

This condition is perhaps the commonest malady met with in family practice in these islands. Climatic conditions from the late autumn to early spring tend to promote the incidence of catarrhal infections, and the widespread neglect of elementary precautions favours their spread.

The best treatment is clearly that of prevention or protection. The common cold or infectious coryza which so often progresses to the conditions under consideration is the basis of the favourite gibe at the expense of our profession—that we are supposed to be unable to prevent or to cure it. The facts are that patients too often regard it as trivial or negligible, and do not consult the practitioner till it has spread to the bronchi or lungs, when they quite rightly speak of a "neglected cold." A day—or perhaps two in severe cases—in bed at the onset of a coryza will usually tend to limit the process to the naso-pharynx, and incidentally avoid spread to others by preventing the droplet infection, which the stage of sneezing is so peculiarly adapted to promote.

The value of prophylactic vaccines is still open to discussion and even to doubt, in view of the fact that the cause of upper air passage infections is probably a filter-passer. In my opinion, though vaccines may not prevent coryza and catarrhal bronchitis, they often serve to protect from the attacks or to mitigate them, and to avoid complications. The use of antiseptic applications to the nasal cavities is also one about which there is no consensus of opinion. I am not in favour of watery saline nasal douches, but I believe that solutions or suspensions of antiseptics and astringents in oil or liquid paraffin may be useful, such as adrenaline or chloretone inhalant, adrephine, metaphedrin, or ephregel.

TREATMENT

The patient should remain strictly in bed, though the decubitus should not be too flat, especially in older patients. The room should be well ventilated, free from draughts, and kept at a temperature not below 60° F. nor above 65° if possible. In the "dry" stage, when ineffective painful cough with retrosternal soreness is a prominent feature, the air of the room may be kept slightly moist by means of a steam kettle, placed well away from the patient. To each pint of water in the kettle five drops of oil of eucalyptus or terebene may be added, or some other volatile oil. Steam tents should not be used, as the object is to moisten the air slightly, not to make the neighbourhood of the patient damp and misty. A moist inhalation is, however, sometimes soothing, and the time-honoured friars' balsam, one drachm to the pint of water at a temperature of 140° F., is often soothing in this stage. The preliminary Turkish bath or hot bath is to be avoided unless the patient can go straight to a warm bed without exposure. A hot footbath, with or without mustard, may be comforting and useful, provided it can be given in the patient's bedroom.

Even though there may be little fever, the diet in the dry stage should be largely fluid, and solid food, for which as a rule the patient has little inclination, should be avoided. Milk, hot milk and water, milk and soda-water, jellies, beef tea, soups, custards, tea, and cocoa, to the total of two or three pints, with hot and warm demulcent drinks—such as hot lemon water, linseed tea, fruit *tsisanes* made by adding fruit syrups up to half an ounce to the pint, or glucose lemonade—may soothe the inflamed bucco-pharynx and shorten the dry stage in the trachea and bronchi. Marshmallow or glycerin and black currant lozenges are soothing. A hot or cold compress to the neck may be comforting. A mustard leaf over the sternum or rubbing in a liniment, such as liniment terebinth. aceticum, may also be helpful. A preliminary purge is usually advised, such as calomel at night followed by a saline in the morning—either a drachm of Epsom salts or sulphate of soda and water, or some effervescent saline.

The most useful medicines at the outset are saline diaphoretics and diuretics: for example, give six-hourly:

℞ Pot. cit. ... ... gr. xx
Liq. ammon. acetat. ... ... ʒ j
Vin. ipecac. (tinct. ipecac.) ... ... ♏ x
Syr. tolu. ... ... ʒ j
Aq. chlorof. ... ... ad ℥ j

For the first night at least it is desirable to give some soporific; 10 grains of Dover's powder is that most commonly employed, but codeine phosphate, grain 1/2 to 1, medinal grains 7, phanodorm 3 grain tablets, or heroin grain 1/12 may be used as alternatives. If prescribed on subsequent nights after the first they should be stopped at the earliest opportunity.

In cases with severe pain or with much dry ineffective cough, 3 minims of vinum antimoniale may be added to the diaphoretic mixture or substituted for the vinum ipecacuanhae. Apomorphine is also useful in this type of case, and may be given in the form of syrup. apomorphinae co. (*B.P.C.*) in 1-drachm doses every six hours for four doses. Each drachm contains 1/36 grain of apomorphine. One-drop doses of tincture of aconite in water were formerly recommended in such cases, especially if there was much fever. When the dry stage gives place to copious expectoration of mucoid material, and later of muco-purulent sputum, simple expectorant mixtures may be given every six hours, such as:

℞ Vin. ipecac. ... ... ♏ x
Tinct. camph. co. (tinc. opii camph.) ... ♏ x-♏ xv
Syr. tolu. (or syr. pruni virgin.)... ... ʒ j
Aq. chlorof. ... ... ad ℥ j

In elderly patients at this stage ammonium salts may be helpful in the form of either the chloride or the carbonate.

℞ Ammon. carb. ... ... gr. iv
Vin. ipecac. ... ... ♏ x
Syr. tolu. ... ... ʒ j
Aq. chlorof. ... ... ad ℥ j

Stimulants are not necessary as a rule unless patients are accustomed to them, when usually small amounts may be allowed. In the later stages patients are often left with a troublesome and persistent cough, particularly at night and in the early morning. This is frequently due to some residual tracheitis, and may be relieved by elixir diamorphinae et terpini c. apomorphina (*B.P.C.*) in 1-drachm doses. Each drachm contains 1/40 grain of diamorphine, 5/18 grain of terpine, and 1/32 grain of apomorphine. Collosol bromoform co. in 1-drachm doses may also be helpful, or some similar proprietary preparation. If cough persists in spite of treatment the nasal sinuses should be investigated and the sputum be examined for tubercle bacilli. If these prove negative a simple acid tonic mixture may be tried, such as

℞ Liq. strych. ... ... ♏ iij
Acid. phosph. dil. ... ... ♏ x
Syr. aurant. ... ... ʒ j
Aq. chlorof. ... ... ad ℥ j
t.d.s., p.c.

The most effective convalescent treatment is often afforded by a few days at a coast resort.

Bronchitis of the Medium-sized Tubes

The clinical manifestations begin as a rule like those of tracheo-bronchitis, but the fever and systemic disturbance are greater and the local symptoms and signs more severe. The same general management, diet, and treatment should be employed at first. Depressant expectorants like antimony and apomorphine should be avoided, except perhaps in the earlier stage of dryness of the mucous membrane.

Stimulant expectorant mixtures may be prescribed as soon as the cough becomes loose, such as:

℞ Ammon. carb. ... ... gr. iij ad v
Pot. bicarb. ... ... gr. x
Tinct. scillae ... ... ♏ x
Syr. tolu. ... ... ʒ j
Aq. chlorof. ... ... ad ℥ j

In patients with bronchial spasm or with asthmatic tendencies, potassium iodide in doses of 3 to 5 grains may be added to this mixture, and 5 to 10 minims of tincture of stramonium or of tincture of belladonna.

A careful watch should be kept on the pulse and blood pressure. Digitalis may be added in suitable doses or Nativelle's digitaline given. Coramine may be taken by the mouth or hypodermically in doses of 1 c.cm. from once to four times a day. If cyanosis or dyspnoea develops oxygen should be administered at once. The most suitable method and the most economical is the continuous administration by a No. 9 nasal catheter or by a special rubber nasal plug. The oxygen cylinder should be fitted with a fine adjustment, and the oxygen should be bubbled through warm water in a Woulfe's bottle at the rate of three to five bubbles a second.

After the first night or two special care must be taken in regard to the use of hypnotics, especially those like opium, morphine, heroin, and codeine, since they tend to lull the cough reflex. It is important, especially in elderly patients, to avoid accumulation of bronchial exudate, particularly at the bases of the lungs. It is sometimes useful to give first thing in the morning the well-known Brompton Hospital "hot-water mixture":

℞ Sod. chlorid. ... ... gr. iij
Sod. bicarb. ... ... gr. x
Sp. chlorof. ... ... ♏ v
Aq. anisi ... ... ad ℥ j

This should be taken in an equal quantity of hot water.

Alteration of position is to be advised in these cases. The patient should have a bed rest or extra pillows, and not be allowed to slip down in the bed. Counter-irritants and hot applications to the skin are frequently of use in this condition. The acetic turpentine liniment is pleasant, and not unduly rubefacient. Antiphlogistine may be applied, or poultices or turpentine stupes. These should be applied to the back and side, and but rarely to the front, owing to the fact that the weight impedes inspiration. The Gamgee jacket, formerly so popular, is, I think, of little use, and often causes discomfort by promoting undue sweating. Stimulants are more often necessary in this type of case.

Inflammation of the bronchioles or capillary bronchitis is a condition which is indistinguishable clinically from bronchopneumonia, and should be treated as such.

Acute Suppurative Bronchitis or Suffocative Catarrh

This condition, though rare, is grave, and is usually due to the pneumococcus. In general its manifestations are similar to those of bronchopneumonia, but cough with copious expectoration, marked dyspnoea, and extreme cyanosis develop very rapidly, while dangerous prostration is a very early feature.

The treatment is similar to that for severe bronchitis of the medium-sized tubes, but oxygen inhalation should be started early; stimulant expectorants should be given freely. Digitalis may be necessary from the start, and coramine may be administered up to 1 c.cm. every four to six hours, either by the mouth or hypodermically, or

even intravenously. Pituitrin, adrenaline, or ephedrine may be prescribed if the blood pressure falls. If marked cyanosis develops early and the heart is beating forcibly, venesection may be tried to the extent of ten to fifteen ounces. If the bronchitis is due to the pneumococcus, and this can be typed, Felton's serum may be injected if the organism proves to be either Type I or Type II. Skilled nursing with careful observation of changes with regard to pulse, colour, position, and cough, are of great importance in all cases of severe bronchitis.

Fibrinous or Plastic Bronchitis

This condition, though rare, may easily be overlooked. In all cases with cough and sputum, especially where cough is violent and paroxysmal, and where there are signs of local collapse of the lung, the sputum should be poured into water in a large transparent glass vessel. In this condition characteristic tree-like casts may be recognized. The treatment is similar to that for severe bronchitis. A mixture containing iodide of potassium and antispasmodics like belladonna and stramonium should be used. Lime-water and olive oil by intratracheal injection have been recommended, but are of doubtful value.

ANNUAL CONGRESS OF RADIOLOGY

The eighth annual congress and exhibition of apparatus under the auspices of the British Institute of Radiology was held at the Central Hall, Westminster, on December 5th and following days. Two medical sessions were held, also a session for papers on physical subjects, and two memorial lectures were given, one by Sir William Bragg on "*X* Rays in the Study of the Coarse Structure of Materials," and the other by Dr. H. H. Berg of Dortmund on "The Digestive Mucosa." The crowded exhibition included many installations of self-protective shock-proof *x*-ray apparatus, motor-driven movable tables for diagnostic work, new sets for deep therapy, and ultra-short-wave installations.

Physicist and Radiologist

Sir HUMPHRY ROLLESTON, in opening the congress, said that the art of medicine was inspired by applied science, but carried on with due consideration for the special circumstances of the individual patient. This might seem a truism, but it was often forgotten. Undoubtedly it was scientific to remove, destroy, or neutralize the cause of disease, but if this were carried out regardless of the patient the result might be disastrous. Radiological treatment of cancer was in some degree exposed to this danger; the patient and his individual circumstances were liable to recede into the background and treatment to be directed solely to the malignant growth. The relation of the pure physicist to the medical radiologist somewhat resembled that of the bacteriologist in the laboratory to the physician in the sick-room. The medical radiologist should not demand too much of the physicist. Each of the two parties had his own field. The proper dose of radiation and the mode of its application were in the province of the medical radiologist, and the role of the physicist was to supply data bearing on those problems which the medical radiologist must finally settle.

Artificially Induced Radioactivity

One of the most interesting demonstrations was by Professor F. L. HOPWOOD of St. Bartholomew's Hospital, on induced radioactivity. He began by reading a sentence of remarkable prescience from H. G. Wells's *The World Set Free*, published in 1914, in which Wells prophesied that the problem of inducing radioactivity in the heavier elements, and so tackling the internal energy of atoms, would be solved by a wonderful combination of intuition and luck in 1933. And in fact it was in 1933 that Mme Curie's daughter, Mme Curie-Joliot, and her husband demonstrated the phenomena. Professor Hopwood reminded the congress of what had already been shown by Rutherford and others to occur on the bombardment of the nucleus of a stable atom, causing it to become unstable and to emit a disintegrating particle. This idea had been carried further in the Curie laboratory. If beryllium, for example, were irradiated by gamma rays or *x* rays of suitable voltage, this metal gave off neutrons, which, being allowed to fall on bromine, rendered it temporarily radioactive. Recently some bromine which had been treated in this way was sent by aeroplane to Professor Hopwood's laboratory from Berlin, and here its radioactivity was found to persist and its period was measured—the first time, he thought, that radioactivity had been induced in a substance in one country and demonstrated in another. The elements to which the radioactivity was imparted had various periods, the half-life activity being in some cases thirty minutes, in others six hours. Many of the elements occurring in the human body could be transmuted temporarily into radioactive substances; the only notable exceptions were hydrogen and calcium. Substances commonly used as drugs, such as manganese, could be similarly treated. By means of a very delicate "counter," connected to a telephone which emitted clicks as the stream of electrons arrived, Professor Hopwood demonstrated induced radioactivity in aluminium and silver and other materials, including, thanks to its phosphorus, an elephant's tusk. He believed that within a few years materials to which this transient radioactivity had been imparted would be available for transmission from laboratories in quantities suitable for therapeutic purposes. Whether they would prove desirable in therapeutic use remained to be seen, but it seemed to him that a vast new field of therapy was being opened up. There was one great advantage in the artificially induced radioactive elements over naturally occurring radioactive elements—namely, that they quickly died or transformed to some stable element, so that a dose could be repeated indefinitely and an uncertain amount of radioactive material would not be accumulated in the body.

Constitutional Effects of *X* Rays

A joint paper by Dr. S. GILBERT SCOTT and Dr. F. HERNAMAN-JOHNSON on the constitutional effects of *x* rays as determined by blood-serum tests was presented by the latter. It was extremely probable, said the authors, that *x* rays, like ultra-violet light, had constitutional as well as local effects. In the case of ultra-violet light, however, a knowledge of its physical properties made it reasonably certain that constitutional action could only be through the skin, and this narrowed the investigation to chemical changes in the surface tissues. All these possibilities were present in *x*-ray action also, but many more, for even with *x* rays of medium wave-length there was not an organ or tissue in the path of the beam which might not be affected. Clinical radiology had so far concerned itself mainly with direct action, but a study of constitutional or indirect effects might yet yield results of great value, perhaps in unlooked-for directions. Recently the vanadic acid blood-serum test, originally introduced by Bendien for the diagnosis of cancer (for which purpose it had not yet been proved reliable), had shown itself of great value in the control of *x*-ray treatment, indicating constitutional reactions to *x* rays and the state of the patient's resistance. Asthma was the first condition to be investigated on these lines. The fact of overdose could be recognized from the serum picture. These allergic patients were very sensitive to radiation, and the

vanadic acid test could indicate when it was wrong to increase the dose. With this test it had been shown that 40 per cent. of asthma cases were likely to benefit from radiation, in another 40 per cent. it was of doubtful efficacy, and in 20 per cent. no good results were achieved. Asthma had furnished the best example up to the present of the value of the vanadic acid test in prognosis and treatment, and the effects of *x* rays, which were undoubtedly constitutional, as opposed to local, could be watched in an objective manner. It was of interest to note that the thorax could be excluded without prejudicing the result. In the case of breast cancer, with wide field *x*-ray therapy of low intensity and medium voltage, a normal curve for the reaction might even be found in the presence of small-scale recurrences or involved glands. On the other hand, a patient going downhill showed a markedly abnormal curve. The appearance of an abnormal curve in a patient apparently well was of bad prognostic import. Once the primary growth had been got rid of, whether by radiation or by operation, the problem of preserving the patient from metastasis was a constitutional one, and the vanadic acid test of blood serum gave results of sufficient constancy to furnish a guide.

THE DIGESTIVE MUCOSA

In his Silvanus Thompson Memorial Lecture, delivered to the congress by Dr. H. H. BERG, who has lately been appointed professor of internal medicine at Hamburg, the speaker described how he had followed up the work of Forssell on the movements of the intestinal mucous membrane, and that of Äkelund in increasing the accuracy of the radiological diagnosis of peptic ulcer. A preliminary condition for the demonstration of mucosal details was complete emptiness of the viscus. In cases of retention of food or fluid it might be necessary to use a stomach tube; for colon examinations several enemas were required. Generally, for oral administrations of barium a watery suspension was used, but for demonstration of details of the oesophagus a jam-like mixture was preferable. As a general rule, only small amounts should be given, sufficient to fill the depressions of the mucosal pattern with a thin layer of the contrast medium. The less the material it was necessary to use the better was the mucosa visible. In the majority of cases three or four swallows of the watery suspension were sufficient to demonstrate the mucosal relief of the stomach walls. Adequate distribution of the thin layer was obtained by varying the amounts, changing the position of the patient, and applying graduated compression. Quick change from horizontal or oblique to erect position was of special value. Screen work and radiography were used in such close connexion that a radiogram of every important detail could be taken instantaneously. Professor Berg paid a tribute to the work of A. E. Barclay: no one had better summarized the general postulates for examination. He then described the theory of Forssell that the different formations of mucosal relief were the result of active movements corresponding to the requirements of digestion, and passed on to indicate some pathological aspects of the condition of the mucous membrane, best set out as follows:

Causes	Symptoms
Pressure from without.	Displacement, flatness, disappearance of folds.
Inflammation.	Elevation, swelling, coarseness, stiffness of rugae.
Ulcer.	Crater with smooth, elevated border; cicatrization with stellate folds converging on the ulcer.
Growth.	Torpescence and loss of folds; sudden discontinuance of folds; irregular protuberances, craters, etc.

With the aid of lantern slides he discussed the various appearances, and concluded with the remark that in the diagnosis of every organic lesion of the digestive tract this new method had proved its value, but nowhere more than in the diagnosis of malignancy. The smallest carcinoma of the stomach he had seen was the size of a thumb-nail; nobody believed him when he said that it was a carcinoma. Six months later, when removed, it was the size of a goose's egg. The problem of cancer, however, was not solved by the detection even of the smallest growth, because small growths had often extensive metastases, and big growths sometimes none. Progress had been made in the differentiation of malignant and benign changes. Chronic ulcer of the prepyloric area could give a very similar picture to malignancy. Chronic gastritis of different types could be suggestive of cancer because of the stiffness of the coarse mucosa. It was always necessary to bear in mind that histological work could not be carried out with the *x*-ray tube. Careful screen work was always the best safeguard against error.

CINERADIOGRAPHY

Dr. RUSSELL J. REYNOLDS gave a demonstration of cineradiography. We have already (*British Medical Journal*, May 5th, 1934, p. 813) described Dr. Reynolds's ingenious methods. He showed films illustrating movements of the joints, of the heart and lungs, of the stomach and duodenum, both in normal and in pathological conditions. One film showed an artificial pneumothorax of the right lung, 500 c.cm. of kaolin having been injected on the morning when the film was taken. He also showed a slow-motion film correlated with graphic records of the heart's action. Within the last fortnight he had been able to incorporate the electrocardiograph tracing on the films. In that connexion, of course, the difficulty had been the elimination of current interference, particularly in view of the fact that he had been working on alternating current cycles.

Dr. Reynolds suggested that there was a large and varied field for research opened up by this new method. It should prove of immense value in investigating lesions of the lungs and pleurae, especially after lipiodol injections, or in cases where artificial pneumothorax had been induced. As regards movements in the alimentary tract in pathological states, the advantages of being able to study such movements indefinitely after the administration of an opaque medium were obvious. In orthopaedic lesions the range of movements in limbs and joints could be observed. He summarized the advantages by saying that the cinematograph method enabled a rapid, inexpensive, and permanent record of the functioning of active organs to be obtained; the continuous "band" made it possible to study movements for an indefinite period, and permanent records might be used for diagnostic purposes, for comparison with previous records, for teaching, or for transmission to other places.

OTHER PAPERS

A therapy generator operating six *x*-ray tubes in parallel was described by Dr. J. STRUTHERS FULTON. By suitably arranging the controls it was possible for the apparatus to be operated by one person. Communication between patient and operator was arranged by a simple telephone circuit; there was also an elaborate timing arrangement. He showed dispositions in which as many as four tubes were simultaneously irradiating a patient, or in which five patients were being treated at the same time on different milliamperages.

Dr. J. RALSTON PATERSON made a plea for the more scientific estimation of dosage in radiation therapy. The use of biological units of dosage was only a temporary though necessary phase in the development of technique,

to be succeeded as soon as possible by the more reliable phase of physical measurement. In radiation therapy this measurement was actually of the x rays or gamma rays used, and must be stated in terms of some physical unit. The choice of unit in which quantity of x rays should be expressed had been settled by the international adoption of the "r." The problem of dosage as it affected radium presented rather different considerations. To describe radium dosage by "milligram hours" was an empirical guide only. No gamma ray unit had as yet received international adoption, but the matter was under discussion, and he hoped it would come about within the next three years. Much more attention should be paid clinically to the time factor in radium dosage.

Three papers on radiographic subjects concluded the congress. Dr. A. C. JORDAN gave a radiological study of asthma due to toxaemia. Granting, he said, the spasm and the oversensitiveness to certain substances, it was still necessary to ask why asthma patients were sensitive in their particular ways. His radiological studies of the gastro-intestinal tract had supplied an answer, in many cases a complete answer. In the course of years a certain number of patients sent to him for gastro-intestinal investigation had been asthmatic; other results of chronic intestinal stasis had been there too, but in every case of asthma the general aspect of the patient had been that of pronounced stasis. To prove his contention that the asthma was due to the toxaemia of stasis, and that it could be cured by thorough treatment of the stasis, he brought forward the x-ray evidences of twenty-seven cases, and sketched the subsequent history of those that had been treated systematically.

Professor J. PRESTON MAXWELL described some studies on osteomalacia and foetal rickets. Radiology had played a large part in the elucidation of the subject. On his last visit home from China he had had very little to offer on the subject of osteomalacia, save radiological evidence, but he had now been able to obtain pathological specimens of what he termed "adult rickets." He showed a series of slides depicting Chinese women and babies, and drew attention to the shrinkage of the body, the neck disappearing, as it were, into the chest, and the standing height sometimes being reduced by as much as six inches. Radiology had played a large part in the discovery of foetal rickets, and he had now sixteen proved cases of that disease.

Dr. J. DUNCAN WHITE read a paper on "Familial Marble Bone." Thirty years ago Albers-Schönberg first described a case of "marble bone," a condition in which there was a transformation of the spongy part of the skeleton into compact bone, resulting in thickening and density of cortical bone at the expense of the medullary canal. Since then about forty cases had been added to the literature. In view of the rarity of the condition Dr. Duncan White brought forward four more cases, all members of the same family, two of them requiring surgical intervention for the relief of cerebral symptoms.

The Therapeutic Union, a new international organization which has come into being this year under the auspices of the Therapeutic Society of Paris, has for its president Professor Maurice Loeper, while one of its vice-presidents is Dr. E. P. Poulton, physician to Guy's Hospital. The Union will include medical practitioners and physiologists who are particularly concerned with therapeutic problems, and will aim at establishing closer mutual relations between them in various countries. There are already some 250 members. It is proposed to hold a congress next year, some time between June and August, at Berne. Those desiring further information about the Union or the congress should apply to the secretary of this society, Dr. G. Leven, 24, Rue de Téhéran, Paris VIII.

THE HEALTH OF THE SCHOOL CHILD

SIR GEORGE NEWMAN'S REPORT

The School Medical Service was founded in 1907, and had therefore completed its first twenty-five years of work at the end of 1933. The occasion is seized by the Chief Medical Officer for a review of the purpose and achievement of the service. The foundation provided the authority first of all with a means of ascertainment, for up to then the local authorities did not know what the physical condition of children actually was. Secondly, there followed arrangements for attending to the health of both groups—the sick and the healthy. For some years the ailing child was referred to the family doctor, but experience showed that certain disorders, such as defective vision, dental decay, and minor ailments, fell outside his sphere or his facilities, or else that the parents were unable to pay his fee. The authorities therefore began to establish means of treatment under their own control. So steadily has this process grown that in 1933 inspection was made of 1,855,499 children in the routine age groups, and of 1,239,427 specially referred on account of sickness. Many of these were treated under the local authority, and certain morbid conditions have been substantially reduced by this treatment. The anaemia of girls has almost vanished. Ringworm is steadily disappearing. Blindness is being prevented. A verminous child does not expect admission to school, and the malnourished child now forms only 1 per cent. instead of 10 or 20 per cent. Heart disease, rickets, and tuberculosis have been steadily reduced, and the condition of teeth is improving. The physical condition of the children has been reformed beyond all comparison with the past. A third national advantage of profound importance is that children have been rendered more fit for education, and education has been more closely adapted to individual needs. Finally, a health consciousness has been developed among parents, who almost universally support the school medical service.

Sir George Newman insists, however, that nothing is being so well done that it cannot be better done, and deprecates any tendency to become static or routine. In some districts there is urgent need for effective co-ordination of the various means of treatment available. Moreover, experience and research are constantly disclosing new aspects of disease and new methods of dealing with it. The school medical officer must be alive to all these. Again, the pre-school child still presents a problem to which more attention should be devoted. Finally, much more consideration should be given to the health of the normal child, so that every child is trained in the way of healthy living. "We have devoted much labour, time, and public money," says Sir George Newman, "to the treatment of the defective child; are we doing all that is practicable for the nutrition, physical education, nurture, and health of the normal child? I fear we are not."

NUTRITION AND SCHOOL FEEDING

The enactment providing for school feeding dates from 1906, and the succeeding years have demonstrated three facts: (1) that a substantial number of children come to school inadequately nourished; (2) that such undernourishment is due to a variety of causes; and (3) that undernourishment does not depend on lack of food alone. It depends upon the natural powers of the body to assimilate suitable food, and these depend upon a properly functioning body. Over many of the indirect causes of undernourishment the local authority has no power, but it is empowered by Parliament to feed and to teach, and every local education authority should examine with the utmost care its moral duties and its legal power in regard to all that this implies. Recent criticism has suggested that undernourishment may be missed by the school doctor, and that his methods are insufficiently thorough or exact. While doctors and other officers of the school service are no more infallible than other specialists, it is unlikely that all of them in any district are incompetent or continually misled. The determination of under-

nutrition is in any case one of exceptional difficulty, as there is no accepted standard of nutrition. In practice, however, the results are sound and relatively uniform, though it may be difficult to tabulate them in a mathematical form. Of the children submitted to routine examination during 1933 1.11 per cent. were found to be malnourished and requiring treatment, while 1.28 per cent. were undernourished and requiring observation. It is obvious from the reports, many of which are quoted, that there is no widespread malnutrition among children attending public elementary schools. In some districts there was a decline in undernutrition, and in others a slight increase.

During the year under review the provision of school meals continued to expand, and at the end of that period 192 authorities were exercising their powers in this way. Generally speaking, the only authorities not providing meals were certain rural counties, some comparatively prosperous seaside towns, and small country towns. The total number of meals provided was 68,800,000, an increase of 6,500,000 on the previous year. The number of children who received meals was 414,800, as compared with 399,400 in 1932–3. More than half the meals provided were in the form of milk, and this has been found to be the most valuable food. The Milk Marketing Scheme came into force on October 1st, 1934 ; the surplus milk is to be supplied to children at school at ½d., instead of 1d., for one-third of a pint. The result of this cannot yet be estimated. The Board of Education has issued a circular to local authorities pointing out the value of the scheme. The provision of school meals was never meant to be a form of poor relief ; its object is to secure that public funds are not wasted in an attempt to educate children who, owing to subnormal nutrition, are unable to obtain full benefit from their education. The children must be selected for the milk or meal by the medical officers. It must be remembered that malnutrition is not the only morbid condition following insufficient or unsuitable food. The recent marked decline of deficiency anaemia, tuberculosis, rickets, dental caries, and infective disease is due in part to the greatly improved general nutrition.

PHYSICAL EDUCATION AND HYGIENE

It is the business of the local education authority to ensure that every child receives an appropriate education in health and physical training, or, if the Greek be preferred, in harmony and gymnastic. The lost incentives of early man's activities of body, which gave him his rude health, have to be created artificially. The organized physical training of the body of every child has for its objective a physiological purpose, a recreational aim, and a mental and moral intention. The physiological purpose must begin in childhood for all children, and the exercises must be so designed as to increase the growth, strength, and control of the body of each individual child. Secondly, physical exercises must be taught in order to increase and develop the physiological functioning of the body, and of the whole body and not only of the muscular system. A child of 5 or 6 must be dealt with differently from the growing boy or girl of 8 or 9, or the older child of 12 or 14. No cast-iron system will suffice, and the final goal of physical training is mental and spiritual.

To make effective arrangements for dealing with the physical education of five million children calls for organization. The subject must be in the time-table ; the school teacher must be equipped ; the teaching must be conducted in accordance with approved standards : it must be supervised by organizers ; and must be regarded as part of the routine education in hygiene. Sir George Newman remarks : " No formal words can express the value of the work of the teachers, for their continuing and living interest and enthusiasm, and for the large amount of time and voluntary services, in and out of school, which they devote to this important branch of education." So great has been the demand for the revised syllabus of physical training, issued last year, that 150,000 copies have already been sold.

There are 182 junior technical schools preparing students for commercial and industrial employment. A recent opportunity for surveying the position of physical education in these schools has not disclosed a very bright picture. Only about half of them have suitable gymnasiums or halls, and a number of them have nowhere at all for physical exercises. This is particularly serious in such an institution, because the training and development of the body is of direct importance from the point of view of future occupation. It teaches precision of movement and economy of effort, and helps to cultivate the habit of assuming the best posture for the work in hand.

A number of reports from the physical training organizers in different districts are quoted, and give a vivid picture of the movement. There are now 169 organizers—four more than last year. Dancing is a vital form of bodily exercise which has not obtained an established place in the physical education of children. It teaches control and balance of mind and body, and aids in encouraging poise, ease, and lightness of movement. It arouses the living sense of rhythm, affords direct training of eye and ear, and develops the feeling of space and order. Also it gives scope for the imagination and creative powers of the child. With so much at stake it should be taught well and wisely. Child dancing should be a simple, free, and living thing, by means of which the energy and natural exuberance of the child's spirit have full play. Anything that savours of self-conscious posturing is harmful. The aim must be to teach dancing rather than dances. During the last two years there has been an exceptional extension of the facilities for swimming, a form of physical training which is of high physiological value, and also recreational and utilitarian.

The new physical training college for men at Leeds, which was opened in 1933 to meet a long-felt need, has established itself satisfactorily ; thirty-seven students have completed the first year's course, most of them being men who have already had teaching experience. There has been a reawakening of interest in the teaching of hygiene, and increasing emphasis is laid upon instruction in the creation and establishment of habits of health. What the child hears or sees may be soon forgotten, but what it does as a habit is retained. The question of sex hygiene still calls forth divergent views, but certain authorities are providing it.

NURSERY AND OPEN-AIR SCHOOLS

The report emphasizes that the child under 5 years of age stands at the gate of the whole educational system, that he is the seed plot of everything—medical, physical, mental, and moral—that what happens to him is bound to have results ; and that he is not yet being sufficiently provided for. Much has been done, but not yet enough. Large numbers of children are admitted to school every year requiring immediate medical treatment, although the percentage has declined from 23 in 1925 to 16 in 1933. The facts are known, and public interest has been drawn to them. There are now six services available for children under 5 : maternity and child welfare centres (between 2,000 and 3,000) ; clinics for toddlers ; 100 day nurseries ; sixty-two nursery schools, with accommodation for 4,933 children ; nursery classes ; and emergency open-air nurseries. Nursery schools play an important part in persuading children to take food to which they are unaccustomed, and in securing suitable dietary, rest, sleep, and fresh air. The average length of stay in the school is two and a half years, and in this period many defects are remedied and prevented. The emergency open-air nurseries have been established in connexion with the Save the Children Fund, the aim being to erect inexpensive buildings in distressed areas, at the same time providing work for the unemployed men. Another invention of the school medical service is the open-air school, the value of which is not by any means fully represented by the fact that there are 146 in existence, because they have introduced the open-air principle into the elementary schools of the whole country.

MEDICAL INSPECTION AND TREATMENT

Since the school doctor can only visit two or three times a year, it is essential that the school nurse should be an intelligence officer and also a link between the medical officer and the home. Teachers are turning more and more to the school medical service to help them to solve their problems with individual children. Increasing co-operation with the family doctor is evidenced by the fact that numbers of children are referred by practitioners to school clinics for diagnosis and treatment. Effective co-operation, says the report, must depend rather on mutual good will than on formal administrative arrangement, but there are certain steps which local authorities can take to promote it. The school medical officer can send the general practitioner a short note when he refers a child to him, and the local authority can publish a small handbook setting forth what services are available in the area. One undesirable result of the increasing interest of the public in the health of the child is a tendency to parental over-anxiety, but the effective reassurance of an anxious parent is by no means a waste of time, and may have a far-reaching beneficial influence on the psychological development of the child. The modern tendency to seek medical advice early not only benefits the individual but also adds to the medical profession's knowledge of how to prevent end-results which may be difficult to cure. There are now 1,340 school medical officers, of whom 264 are whole-time and 370 are women. There are 992 specialists, of whom thirteen are employed whole-time, and 778 school dentists, 488 being whole-time. The total number of nurses is 5,585. The number of children inspected in specified age groups was 36.7 per cent. of those in average attendance, and this figure is raised to 61.3 per cent. when the children referred for some special reason are included. The table of defects requiring observation or treatment remains much the same as in previous years. There is a decrease in the number of children suffering from chronic tonsillitis and a slight increase in malnutrition. Schemes of medical treatment for secondary school children have not yet reached the same stage of completeness as those for elementary school children.

TREATMENT SCHEMES

During the year under review there was no significant increase in the scope of treatment schemes, but thirty-four authorities effected improvements by extending their existing provisions. The total number of clinics for minor ailments—eyes, teeth, and orthopaedic defects—has increased slightly, but those for operations on tonsils and adenoids and the *x*-ray treatment of ringworm have decreased. Many authorities make use of voluntary hospital provision for forms of treatment which require expensive apparatus or elaborate premises. Nearly all school medical officers report a steady improvement in cleanliness, and there has been an enormous reduction in the incidence of ringworm. The direct application of elastoplast for impetigo contagiosa is being tried in some centres, and is said to heal the sore more quickly than the older ointments, and at the same time to prevent spread of infection. Several local authorities have made arrangements to test the eyesight of children below the age of 8, and valuable results have been obtained despite the difficulties. Several squint clinics are doing excellent work. The audiometer is being used for testing hearing, but the report utters a warning that this instrument may give a somewhat exaggerated figure for the incidence of impaired hearing. Much valuable work is being done in a few districts under aural schemes of treatment, but this branch of work is much less common than, and its development has not reached the same degree as, the visual and orthopaedic schemes. A committee was appointed in January, 1934, to discuss the medical, educational, and social aspects of the problems attending children suffering from defects of hearing not amounting to total deafness. The committee has to consider the best means of ascertainment; otological standards for determining the need of special educational provision; cause, prevention, and treatment of defective hearing in children; the value of electrical aids; and the best type of educational provision for those unfit for ordinary schools but not bad enough for deaf schools.

TONSILS, EYES, AND TEETH

The term "enlarged tonsils" has now been replaced by the words "chronic tonsillitis," the categories for defects of the nose and throat now being: chronic tonsillitis only, adenoids only, chronic tonsillitis with adenoids, and other conditions. The year 1933, therefore, was a transitional period, but the records are interesting in showing a transference to the fourth category of a number of cases of tonsillar hypertrophy which would have appeared in the first group in previous years. This was to be anticipated, but it is surprising to learn that there is a much greater relative decrease in the category of "adenoids only." The operations for tonsils and adenoids numbered 77,564, as against 95,875 in the preceding year and 110,239 in 1931. Early in the year it was decided to obtain an authoritative expression of opinion as to the best anaesthetic for these operations. The body of anaesthetists consulted deprecated the use of chloroform and of chloroform and ether mixtures.

A committee appointed in 1931 to inquire into the medical, educational, and social aspects of problems affecting blind children reported in July, 1934. Their report was reviewed at the time.[1] The fundamental line of thought in it was to emphasize that partially blind children belong educationally and socially to the sighted world; the term "partially sighted" was suggested instead of partially blind. The committee formulated ophthalmic standards for defining these children, and the report strongly urges that all those responsible for blind children should most carefully review their charges periodically, in order to determine what type of treatment is most appropriate to them.

The report declares that of all the schemes provided by the local educational authorities the school dental service is the slowest in developing. During the year there was an increase of only eleven in the number of school dentists, bringing the total to 566. Since this means only one full-time dentist to 8,900 children, it is obvious that there is much to be done. During the year 3,303,983 children were inspected, and there was a slight increase over the preceding year in conservative work, with a corresponding decrease in extractions. A good deal of propaganda has been carried out by the Dental Board, but there is still great need of a wider appreciation among the whole population of the value of care of the teeth. Dental disease is said to be the most common of all physical defects among children.

ORTHOPAEDIC AND MENTAL WORK

A considerable proportion of children in the elementary schools show postural defects. The aim of an orthopaedic scheme is to ascertain the cripple at the earliest possible moment and to provide treatment, re-education, and after-care, and, where necessary, special vocational training. Any scheme, to be effective, must include children under 5, and the education, health, and infant welfare committees must co-operate. The interrelationship of the orthopaedic clinic, the infant welfare centre, the tuberculosis dispensary, and the orthopaedic hospital is of the utmost importance. Nor must the necessity for the co-operation of the parent and private practitioner be overlooked. To embark upon orthopaedic treatment without ensuring effective co-ordination of all concerned is, says Sir George Newman, to court disaster from the outset. The diseases chiefly responsible for crippling occur mainly before school age, and ascertainment must be pushed earlier and earlier. Comprehensive schemes have been approved in 233 areas, but there are still forty areas where no provision of any kind has been made for cripples, and in another forty-three areas there are only partial arrangements which are of very doubtful value.

The report gives a survey of the special schools for physically and mentally defective children, and of the work done in them.

[1] *British Medical Journal*, 1934, ii, 68.

Infection and Mortality

The common infectious diseases—measles, whooping-cough, diphtheria, and scarlet fever—still occupy a prominent position among the principal causes of death in childhood. Measles and whooping-cough take their toll in the younger age groups and the other two in the older children. The death rate from tuberculosis continues to fall, but 1933 showed an increase in death from rheumatic fever and heart disease, an increase correlated with the prevalence of scarlet fever during 1933. This disease was 50 per cent. more common than in 1932, and 129,525 cases were notified. The total number of deaths, however, was well below the average. There was a serious outbreak of apparently simple sore throats in some districts, and this may well have been part of the scarlet fever wave.

THE INFANTS HOSPITAL EXTENSION

OPENING BY THE PRINCESS ROYAL

The Princess Royal, on December 11th, opened a new in-patients' block, nurses' home, and remodelled wards at the Infants Hospital, Vincent Square, Westminster. Her Royal Highness was received by the Mayor of Westminster and by Sir Gomer Berry and Dr. Eric Pritchard, respectively the chairman and the medical director of the hospital, and various members of the staff were presented. Brief speeches were made by the Chairman and Dr. Pritchard, and by Violet, Lady Melchett, after which the Princess declared the new sections open and made a round of inspection.

The new building, on an extension of the island site where the hospital has stood since 1907, overlooking the playing fields of Westminster School, will accommodate seventy infants and seven nursing mothers, and, with the thirty cots in the reconstructed old building, will bring the total accommodation to just 100 patients. The hospital, which takes children up to the age of 5 years only, claims that it is the largest of its kind in the British Empire. Only two years ago a new out-patient department was opened, containing a large waiting hall, a number of consulting rooms, departments for *x*-ray work, light treatment, massage and remedial exercises, a dispensary, and a theatre for minor operations, with, in the basement, isolation rooms for patients suffering from infectious complaints, pending their removal elsewhere.

Observation "Wardlets" and Milk Laboratory

The ground floor of the new building is given up to administration. On the first floor there are seven small separate rooms for the accommodation of nursing mothers with their infants, also four separate wardlets, each containing one cot only, for observation purposes. Each of the next two floors contains five wards for four patients, and four additional ones for either one or two cases. On the fourth floor is a well-equipped operating theatre, with anaesthetic and sterilizing rooms, and on this floor, also, there is accommodation for a number of private patients in separate wardlets. Every possible arrangement is employed for ensuring light and ventilation and the avoidance of cross-infection. Open-air balconies, to which every ward and wardlet has direct access, extend along three sides of the hospital, and are large enough for all patients to be put in the sun or shade, according to the time of year. The separating partitions are all of glass to facilitate supervision and to provide the maximum of light. Every ward has its baby's bath, so that risk of change of temperature on passing to an outside bathroom is avoided, and each infant has its own locker with all toilet provisions and thermometer. The barrier system for the prevention of infection is carried out meticulously. The older part of the hospital building has been reconstructed to accommodate surgical cases, housed in two large and two small wards, providing a total of thirty cots. On the top floor is a fully equipped milk laboratory, with refrigerator and dietetic kitchen.

The new nurses' home provides for thirty-six nurses; the nursing staff in an infants' hospital of 100 cots has, of course, to be much larger than that, but others are still accommodated in the old home apart from the main building, where also lecture and demonstration rooms have been installed. The pathological and research laboratory, of surprising extent for a relatively small hospital, was designed by the founder of the hospital, Sir Robert Mond, more than twenty years ago, and so well and ambitiously was it planned that when the main institution had recently to be reconstructed in accordance with modern ideas no alterations were necessary. Last year nearly 6,000 investigations of one kind or another were carried out in this laboratory.

Clinic for Deaf Children

One department of the reconstructed hospital is a clinic for deaf or partially deaf children, who are likely to go on to deaf-mutism unless some attempt is made to educate them. An amplifier enables those who have any sense of hearing to appreciate sound, and for others there is a special instrument which enables them to follow the voice by using the tips of their fingers. The decoration of the hospital has been well carried out on simple lines. The whole of the new buildings are heated by the pleunum and ceiling-panel systems, with provision for emergency heating by gas and electric fires when required. All the floors of the wards are composed of teak blocks, while those of the consulting and treatment rooms are covered with rubber. The cost of the new buildings and reconstructions has been £150,000. In view of the considerable enlargement of the hospital's provision the consulting staff has been increased. The schedule of charges for private patients has not yet been worked out, but something like £1 a day was mentioned. It goes without saying that an infants' hospital is the most expensive of general hospitals to run.

Reports of Societies

MENINGITIS OF OTITIC ORIGIN

At a meeting of the Section of Otology of the Royal Society of Medicine on December 7th a discussion took place on meningitis of otitic origin. Mr. E. A. Peters was in the chair.

Mr. T. B. Layton, in opening, limited himself to the cases of otitic meningitis which arose from the newly infected mastoid. He divided lumbar puncture into diagnostic, prognostic, and therapeutic. A diagnostic lumbar puncture was performed to distinguish an otitic from other forms of meningitis, a prognostic to determine the stage to which the disease had progressed, and a therapeutic as supplemental therapy, either for drainage of the theca, intermittent or continuous, or for the insertion of pharmacological substances into the theca. The essential treatment in every case was to remove the "factory" of organisms in the mastoid or other part of the temporal bone which was in contact with the dura mater. He proceeded to speak in detail of the treatment common to all stages. The mastoid was opened, and if a track of disease could be recognized leading down to the dura mater it was followed and the bone in contact with it removed widely from both middle and posterior fossae. Steps were then taken to fix the wound widely open, and the cavity was hosed with saline, anything up to a couple of gallons. The container was held high and the nozzle at some distance from the wound, so that a good stream played upon it, and it was then tightly packed. The operation did not save the patient's life, but it put him in such condition that the nurse, under medical guidance, had a chance of doing this. Mr. Layton then passed to a description of the three stages of otitic meningitis. The symptoms were bilateral and proceeded from above downwards. The first was rigidity of the neck. As soon as this symptom was found the treatment already described should be instituted. Every hour lost endangered the patient's life. Lumbar puncture, in his opinion, should

not be done at this stage. It resulted in delay, hurt and distressed the patient unnecessarily, and revealed nothing not already known. By disturbing the intrathecal circulation it might do harm. There were those who said that this first stage was not meningitis, but he begged that it might not be called meningism, for that word, by its origin and tradition, was associated with inactivity, and a term was needed which inferred immediate and vigorous treatment. "Meningeal irritation" would be better. Where rigidity of the neck only was present the great majority of patients should recover. Once any further symptom had arisen the case would not be safe "unless luck is with you, and you must not expect this to be so in more than alternate cases." By "luck" Mr. Layton explained that he meant the combination of unassessable factors. The second stage was that in which Kernig's sign was present in addition to rigidity of the neck. The state in which the sign could not be elicited but at the same time one could not feel sure of its absence formed the boundary zone between the first and second stages of meningitis. The boundary zone between the second and third stages was that in which the abdominal reflexes were lost. For many years he was uncertain whether Kernig's sign appeared before or after the loss of the abdominal reflexes, but now he felt certain that it always preceded. The two symptoms of neck rigidity and Kernig's sign, and their relation one to the other, were the only signs of clinical importance. If the patient's life was to be saved action must take place before anything else developed. Headache was due to the distension of the theca with fluid; he had not found it an early symptom, and would class it in the late second stage. In this second stage a prognostic lumbar puncture should be done, and from the appearance of the fluid a decision made as to whether the prognostic lumbar puncture should be converted into a therapeutic one. If the fluid was clear and the pressure not high this should not be done. If clear, but with an increase of pressure, sufficient should be removed to reduce it to normal. If cloudy, more should be drawn off, the exact amount depending upon whether the patient was under an anaesthetic or not. In the subsequent treatment at this stage he believed that if the fluid was clear the treatment should be that described in the first stage; if it was opalescent this should be supplemented by intermittent thecal drainage obtained by performing lumbar puncture twice or thrice daily for several days. The number and period should be determined by the characteristics of the fluid and the condition of the patient, with special reference to headache and rigidity of the back. In the late stage of otitic meningitis the patient lay on his side with the knees bent up, the back extended, and the head thrown back. A cry escaped him from time to time, owing to the severity of the headache. The lips were parted, the mouth dry, the tongue heavily furred, and the temperature steadily mounting. It was characteristic of the condition that the symptoms were exactly bilateral. In this stage of the case a spirit of defeatism had been acknowledged; nevertheless, he thought these cases should be attacked with vigour and determination, always remembering that a case should never be allowed to get to this stage if it could be helped. A prognostic lumbar puncture must be done. In the examination of the fluid he laid most stress upon two observations: the number of cells as indicated by the degree of opacity, and the presence of organisms. A distinction must be made between cases in which the haemolytic streptococcus could be grown *in vitro*, and those in which an organism, probably the haemolytic streptococcus, could be observed directly in a smear. The former was of pathological interest only, and of no clinical value; the fight was over before the report arrived. Intermittent thecal drainage was still a stand-by for the milder cases in this group. The insertion of any antiseptic drug was valueless. Whether intermittent thecal drainage would occasionally save a case he did not know; it was not to be relied on. He did not think Jenkins's operation of translabyrinthine drainage was applicable to these cases, except where the access of the disease to the meninges was across the labyrinth. Along two other lines of treatment they must work in the future: (1) to add to intermittent drainage of the theca the replacement by a serum, specific or non-specific; and (2) to replace intermittent by continuous thecal drainage.

Mr. NORMAN A. JORY said that any pressure of the fluid above 200 mm. of mercury was to be regarded as pathological. Anything which raised the intracranial venous pressure and the pressure—in consequence—of the choroid plexus gave an increased filtration of the fluid. In meningitis several factors combined to raise this pressure. An increased cell count over 10 per c.mm. must be regarded as pathological. On the count alone a degenerating glioma of the brain could be confused with a cerebral abscess. In a series of thirty-nine cases of acute septic lepto-meningitis seen at one hospital in ten years, thirty-six proved fatal. The majority of the cases were in children. There was acute or subacute trouble in the mastoid in twenty-nine cases; organisms were recovered from the cerebro-spinal fluid in twenty-one. In thirteen of the cases lumbar puncture proved sterile. Translabyrinthine drainage was carried out in only three cases. In three instances the labyrinth was found infected at the necropsy. In all the cases the chlorides were below 700 mg. per 100 c.cm. In serous meningitis the fluid was under increased tension, with increased protein, and it might be either clear or turbid.

Dr. C. P. SYMONDS said he considered that neck stiffness and Kernig's sign depended on irritation of the posterior root in the lumbar and posterior cervical regions; he did not regard them as signs which were inseparable from actual meningitis. He spoke of a case of tuberculous meningitis which came to necropsy and yet there had never been neck stiffness; the exudate was confined to the cisterna pontis. But one could not say that when neck stiffness and Kernig's sign were absent there was no meningitis; early, localized, or mild meningitis might exist without the presence of these signs. A diagnosis could be made only by an examination of the spinal fluid. There were three main modes of progression of infection from the middle ear to the meninges: (1) from infected vessels into the bone, these vessels being ultimately connected with those in the subarachnoid space; (2) the path might be through the labyrinth, whose fluid communicated with the cerebro-spinal fluid; (3) through bone, dura, and arachnoid, with a reactive process on the part of the newly infected tissue. If the invasion was by means of infecting blood vessels there might be no premonition of meningitis. When the invasion was in the form of osteomyelitis, with progressive spread step by step, warning signs such as headache, vomiting, and increased temperature were very important. With regard to the risks associated with lumbar puncture, he had at one time stressed the danger of micro-organisms finding their way via the blood stream to the meninges, this being rendered easier by the puncture, but investigations in America did not support that fear. But he still felt that withdrawal of spinal fluid might lead to mechanical rupture of adhesions, and so to the diffusion of a meningitis which previously had been only local. One case he knew was that of a patient with extradural abscess who, following lumbar puncture, rapidly developed a diffuse meningitis. The danger was greatly lessened if not more than 2 c.cm. of fluid was removed and a very fine needle was used so as to withdraw it very slowly. He tried to have a report on the fluid within six hours of the puncture; the cell count was the important feature, and the quantitative estimate of the protein was quickly done. Helpful points in prognosis were the presence and nature of the micro-organisms found and the patient's general condition. As to the possibility of recovery of a case showing micro-organisms in the spinal fluid, Neumann published a series of fifty-nine cases of otitic meningitis, twenty-two of which recovered, six having had organisms in the fluid. He doubted the efficacy of serum, and his objection to its use intrathecally was that it provoked a marked reaction of the meninges of itself.

Mr. E. WATSON-WILLIAMS said that in these cases neck rigidity, without other signs, was not confined to early stages. In a series of twelve cases neck rigidity was of no great significance in prognosis, and it did not indicate

the stage of the case: five of the twelve cases not showing neck rigidity early, died, and of seven who had marked rigidity and head retraction, with Kernig's sign, one died. Two factors which had a direct bearing on the prognosis were: first, the presence of organisms in the fluid, a matter of grave prognosis, but not necessarily fatal; secondly, the interval between the onset and the date of operation. If a patient did not get well with 40 c.cm. collosol silver solution fifteen minutes before daily lumbar puncture, he thought there was a poor chance of his answering to more vigorous measures.

The PRESIDENT said there were two groups of cases: (1) those of infection owing to approximation—that is, in which streptococcal infection passed through all barriers and directly infected the meninges; (2) those owning the usual causes. He thought that the condition named by some "meningismus" was present in more cases than was generally recognized. Mr. SYDNEY SCOTT said that when comparing sets of statistics on this subject it was impossible to make a just comparison unless one could be sure that only cases showing micro-organisms in the fluid were included. Retraction of the head he regarded as a very important sign of meningitis, but he would not diagnose a case without other confirming signs, and lumbar puncture should be done. When a case of meningitis succumbed, it was because of either encephalitis or septicaemia. The so-called "lucky" cases, in which recovery ensued, were those in which the antibodies were potent and the infection relatively mild. Transthecal drainage had but a limited applicability. He related several difficult cases. Mr. HOLT DIGGLE showed how much the accepted treatment of otitic meningitis had varied in nine years. He considered that if a patient had headache, perhaps with a little vomiting, and he had a tender spot in the mastoid region, he would eliminate the sepsis, but saw no reason for disturbing the lumbar theca by reducing the pressure if there was a danger of spreading the infection. Cases had recovered which had no treatment other than repeated lumbar puncture. Mr. C. P. WILSON asked questions as to procedure, and Mr. LAYTON and Dr. SYMONDS replied.

PUERPERAL SEPSIS: SERUM TREATMENT

At a meeting of the Fever Group of the Society of Medical Officers of Health on November 30th, with Dr. H. S. BANKS, the president, in the chair, Dr. J. M. GREENWOOD, late assistant medical officer, Monsall Fever Hospital, Manchester, opened a discussion on "Puerperal Sepsis."

Dr. Greenwood based his remarks upon the number of patients admitted to Monsall Hospital, Manchester, during the twelve months, August 1st, 1933, to July 31st, 1934. During that period, he said, 196 women were discharged from the puerperal sepsis unit of the hospital, and these cases might be classified as follows: (1) sepsis following full-time labour, 112; (2) sepsis following abortion, sixty-two; (3) admitted as septic, but not considered to be so, twenty-two. General peritonitis was found in twelve and septicaemia in eleven cases. Anaerobic cultures were not made. Four of the former group had a septicaemia associated with the peritonitis. Normal labour had preceded admission in 53.3 per cent. of all patients, in 55.5 per cent. of those with peritonitis, and in 20 per cent. of those with septicaemia. The symptoms and signs of general peritonitis varied considerably from those enumerated in textbooks. They were chiefly as follows: gradual onset; anxious expression; tympanites; vomiting, 50 per cent.; diarrhoea, 33 per cent.; rigors, 75 per cent.; no pain, or rather severe pain; no rigidity of abdomen; average range of temperature, 100° to 103° F.; pulse between 120 and 140. Operation was performed in every case of doubt, and no abdomen was opened unnecessarily. Cases of peritonitis were not admitted much earlier than others; this was probably due to the difficulty in diagnosis. Cases of septicaemia, however, were admitted rather earlier. There were sixteen deaths in the total of 196 patients, giving a mortality of 8.1 per cent. Four of these patients died from causes other than puerperal sepsis, and twelve from puerperal sepsis in 174 septic cases, giving a mortality of 6.7 per cent. It was found post mortem that in all the patients who died from sepsis the uterine wall was infiltrated with white cells. One specimen was obtained by subtotal hysterectomy in a patient with peritonitis following a perforated uterus after abortion; a well-marked leucocytic barrier line could be seen microscopically. This patient recovered. Treatment was directed at preventing complications after the onset of puerperal sepsis. Glycerin irrigation of the uterine cavity was a routine measure, as well as other general procedures. It was shown by Philips in 1923,[1] Dr. Greenwood continued, that prior to the use of glycerin, when douching of the uterus was employed at Monsall Hospital, the complications present were about double those found after glycerin therapy was instituted. He also showed that the average duration of stay in hospital was forty-eight days, as compared with 26.2 days when glycerin was used. The duration of stay must vary with each individual medical officer, but in the present series all the patients were able to walk up and down a flight of stairs before discharge. The duration of stay was 25.4 days after full-time labours, and an average of 22.5 days after abortion. Glycerin irrigation of the uterus was employed in cases of septicaemia and peritonitis; intramuscular arsenic, given in the former, appeared to be of some value. Anti-scarlatinal antitoxin was only used in a few cases, such as puerperal scarlet fever. It was considered that the report of Benson and Ranklin[2] on 114 cases of proved septicaemia by blood culture demonstrated that serum was of no value in the treatment of the condition. The treatment of peritonitis resolved itself into early diagnosis and laparotomy, but the results were very unsatisfactory. It was found that all the patients with a haemolytic streptococcal peritonitis died. Dr. Greenwood concluded by saying that attention was being drawn to the prevention of puerperal sepsis, and it was found in the report of the Ministry of Health[3] that 50 per cent. of deaths might be prevented. Supposing this result were achieved, 50 per cent. of women would still require treatment. The treatment of puerperal septicaemia and peritonitis merited as much consideration as the prevention.

Dr. COLEBROOK spoke of the results of treatment by anti-streptococcal sera in cases admitted to Queen Charlotte's Hospital. They afforded no evidence, he said, that the serum had been useful, but rather suggested that in some cases it might have had a harmful effect. He thought there was need for careful investigation of this latter possibility, and that nothing was to be gained by the continued use of the sera now available.

Mr. WYATT said he regarded diarrhoea in cases of general peritonitis as almost a constant symptom; perhaps it had not evidenced itself in Dr. Greenwood's series, as the peritonitis had been present in some of the cases a day or two before admission, and it was undoubtedly an early symptom. The highest pulse in two of the patients with septicaemia who recovered was 116; this was very surprising, since in all cases with a haemolytic streptococcus in the blood a pulse rate in the neighbourhood of 140 was usual. Concerning Dr. Colebrook's report on the possible harmful action of serum, Mr. Wyatt said it was a pity the cases had not been analysed according to whether or no the patients had been given serum. He asked Dr. Colebrook if he had any idea whether blood grouping had been done in horses in the same way as in man, and whether that might have any bearing on the action of sera in general.

Dr. R. A. O'BRIEN said that serologists would be deeply interested in Dr. Colebrook's figures and deductions, but he did not think the collected figures from the whole country would bear out the latter's interpretation of his own series. Though the old style of anti-streptococcal serum showed no protective value in the laboratory, the modern concentrated streptococcus antitoxin used in scarlet fever would save the lives of rabbits given lethal doses of either filtrate or culture of haemolytic strepto-

[1] Philips, H. J.: *Proc. Roy. Soc. Med.*, 1926, xix, 26.
[2] Benson and Ranklin: *Lancet*, 1933, i, 849.
[3] Report of the Departmental Committee on Maternal Mortality and Morbidity, 1932, p. 14.

cocci, whether obtained from scarlet fever or puerperal patients. He did not agree that horse serum was lethal to mice, for he had seen many batches of serum tested by intravenous injection into mice of relatively large quantities. It was difficult to accept that horse serum was harmful to human beings, for the huge series of cases treated in America with anti-pneumococcus serum, either concentrated or unconcentrated, had never shown a higher mortality among the serum-treated than among the controls.

Professor JAMES YOUNG referred to the question, which Dr. Greenwood had raised, of the route of infection in cases of peritonitis. There could be no doubt, he said, that spread along the open veins of the uterine wall was a common mode of dissemination, and thence it was possible the peritoneum became involved. As against a spread by the Fallopian tubes he referred to cases of criminal abortion where acute peritonitis was present in the absence of any microscopical evidence of tubal infection. He regarded Dr. Colebrook's figures as of great interest, and agreed with him that they seemed to suggest that the employment of serum in puerperal sepsis might seriously aggravate the risk. The findings were of such clinical importance that they demanded a thorough investigation of the whole matter on large and comparable groups of patients.

Dr. SAGE SUTHERLAND gave a survey of the puerperal sepsis case mortality at Monsall Hospital during the period from 1910 to 1933 (twenty-four years); this showed a steadily increasing recovery rate. The highest death rate was 28.8 per cent. in 1920, and the lowest 7.9 per cent. in 1923. During the seven years ending 1933 the incidence of septicaemia among 1,130 cases of puerperal sepsis was 12.7 per cent., and was diagnosed as the cause of death in fifty-four cases, giving a mortality rate of 37.5 per cent. Peritonitis occurred in thirty-one cases in this series—incidence of 2.7 per cent. All these cases were fatal. During the last twelve months out of nine cases of puerperal peritonitis three patients recovered. This was attributed to operation at a much earlier period, and, as Dr. Greenwood pointed out in his paper, to the fact that in no case was the abdomen opened in error. Dr. Sutherland referred to minor septic infections unassociated with subjective symptoms as a possible source of morbidity resulting from the puerperium, the only sign leading to diagnosis in many cases being the objective symptom of subinvolution of the uterus, the absence of subjective symptoms being due to the insensitivity of the larger portion of the pelvic generative canal, sometimes spoken of as the "great silent area of the pelvis." In his opinion infection was more readily spread by the lymphatic drainage system than by the return blood circulation, and there was some analogy between puerperal infection and infection of the blood stream from a poisoned wound through the lymphatic system. Thrombophlebitis, he said, usually remained undiagnosed until the occurrence of cerebral or pulmonary embolism, and the absence of success in treatment was frequently due to the difficulty definitely of tracing the primary source of infection of the blood stream and lymphatic supply until the symptoms had progressed beyond the most favourable period for treatment.

Dr. H. STANLEY BANKS said it was becoming quite clear that neither the old anti-streptococcal serum nor the newer streptococcus antitoxin exerted any beneficial effect in puerperal septicaemia and peritonitis, which were the forms responsible for most of the mortality. Whether the antitoxin was of value as a prophylactic against these grave forms was, he thought, neither proved nor disproved. The other principal new factor in recent treatment was glycerin irrigation of the uterus. His own experience of the method was entirely favourable, provided correct technique was employed. The available evidence appeared to suggest that the substitution of glycerin treatment for former crude methods had had a favourable influence on the fall in mortality. In one particular form —namely, puerperal scarlet fever—where presumably the Dick toxin was a noxious agent, treatment by intravenous antitoxin was attended by strikingly favourable results. He had frequently given hundreds of cubic centimetres of horse serum intravenously with apparently beneficial results, except perhaps in patients so ill as to be beyond the power of reaction. The suggestion that certain horses appeared to give a toxic serum was one that called urgently for investigation. In an extensive experience of the use of scarlet fever antitoxin intravenously, he found with all the makes of serum he had tried that batches were occasionally encountered which were entirely unsuitable for intravenous injection, owing to the severe immediate reactions they produced. None of the suggestions so far advanced by serum makers afforded a satisfactory explanation of this phenomenon.

GROWTH-RETARDING FUNCTION OF PARATHYROIDS

At a meeting of the Liverpool Medical Institution, held on November 29th, with the president, Dr. J. MURRAY BLIGH, in the chair, Dr. T. LLOYD HUGHES read a paper on "The Parathyroid Glands, particularly in Relation to their Growth-retarding Functions."

Dr. Hughes said that the work of Thompson and Robinson in 1931 had led to the investigation of the possible relationship between the parathyroid oxyphil cells and the growth-retarding hormone. Dr. Hughes then described the investigation he had made. The parathyroid glands were dissected out from 200 post-mortem cases, and were examined from the point of view of numerical, anatomical, and histological variations. The oxyphil cell content of all the glands in these cases was numerically computed according to a modification of a method used by Rasmussen in counting the oxyphil cells in the anterior lobe of the pituitary. In this way variations in the oxyphil cell content with age and various diseased conditions were identified and graphically represented. The oxyphil cell content of the parathyroid glands was found to increase with age in a more or less regular manner. The oxyphil cell content of the parathyroids was shown in cases of malignant disease to be reduced below the normal for the age period. This was considered to indicate an absence of growth-retarding hormone resulting in a tendency in the body to develop conditions of excessive growth should the necessary stimulus be forthcoming. The possibility was considered of the oxyphil cells being cells of special function related to the growth-retarding factor isolated from the parathyroids, and not degeneration products of the principal cells.

CLINICAL CASES

At a meeting of the North of England Obstetrical and Gynaecological Society at Sheffield on November 23rd, with the president, Professor DANIEL DOUGAL (Manchester), in the chair, Mr. J. E. STACEY (Sheffield) described some clinical cases. The first was an unusual abdominal cyst.

Mrs. T., a 4-para aged 47, complained of gradual abdominal enlargement for over two years, with vomiting after overeating and dull pain in the upper abdomen for six months. She had had one attack of jaundice three years previously, and was severely constipated. A huge cystic mass filled the abdomen, the girth being fifty-four inches; on bimanual examination the cyst filled the pelvis, pushing the cervix behind the symphysis. A diagnosis of ovarian cyst was made and the abdomen opened by an incision eight inches long. Three pints of brownish fluid were free in the peritoneal cavity, and the abdomen was filled by a thick-walled cyst adherent to all the viscera but not to the parietes. Forty-six pints of brownish fluid containing cholesterol were aspirated. The cyst was opened through the transverse mesocolon, and an inspection of its posterior wall showed what appeared to be pancreas. Marsupialization was done, and the patient left hospital with the wound healed after draining five weeks. Analysis of the fluid proved that the cyst was pancreatic, lipase, trypsin, and amylopsin all being found. Mr. Stacey had been unable to find so large a pancreatic cyst described in the literature.

The second case was that of a nullipara aged 39, married for thirteen years. She had had five weeks' daily haemorrhage with pain, following thirty-three days' amenorrhoea; her periods normally occurred every twenty-four days. This history and the presence of a tender mass felt behind the uterus, apparently in the pouch of Douglas, led to a diagnosis of ectopic gestation. On laparotomy the uterus was found to be two months pregnant an irregular mass, two inches by one inch by half an inch, was seen growing from the back of the lower segment and attached to the rectum. It was decided to remove it in order to prevent obstructed labour; during its extirpation the uterine cavity was opened and part of the cervix removed; hysterectomy with bilateral salpingo-oöphorectomy was therefore done. Part of the mass was left adherent to the rectum. The uterus contained five fibroids, one being the size of a walnut and encroaching on the cavity; the foetus was two and a half centimetres long. Section of the tumour showed an adenomyoma of the recto-vaginal septum, with decidual reaction.

Mr. Stacey went on to report a series of five cases of epithelioma of the vulva, treated in the first instance with radium. At intervals varying from three months to two years after the radium treatment excision of the vulva with the diathermy knife had been done, owing to extension of the growth or severe local pain, or both. The radium dosage in specified cases was applied in the form of twenty-five needles, each of three milligrams, for seventy-two hours, to the ulcer and regional glands. Sections taken after the radical operation showed radium burns in two cases, and epithelioma was present in all. Mr. Stacey had been impressed for some time by the ineffectiveness of radium treatment for vulval carcinoma. He found that when the ulcer failed to heal extension was rapid, and radium burns caused such intense pain that local excision was soon demanded. He suggested that a judicious combination of radium and excision at the start, with the addition of deep *x* rays, was perhaps the solution of the problem.

The President described a case of malignant ovarian tumour, and Mr. St. George Wilson (Liverpool) one of angular pregnancy.

CORK CLINICAL SOCIETY

At a meeting of the above society, on November 30th, Dr. R. C. Cummins reported a case of vertigo. After first dealing with the commonest causes of vertigo, the speaker outlined the clinical features of a recent case, the attacks being very severe and becoming progressively worse. He had come to the conclusion that the causal factor here was a septic focus in the form of low-grade infection around the teeth, though they were not badly diseased. Removal of the teeth resulted in a complete recovery. The point stressed by Dr. Cummins was that the teeth, as seen in this patient, were the most dangerous and yet the most difficult type of teeth to deal with, because they remained efficient for mastication and caused no pain or other obvious symptoms. They were grey-tinged, dull, but firmly set. A slight blue line was present at the gum margin, but no pus could be milked up. In such cases the individual is loath to agree to, and may even resent, removal. But painless low-grade inflammatory reaction was taking place round the roots, making them firmer, and extensive bacterial absorption into the circulation was certainly present. Dr. O'Hea Cussen then read a paper on speech defects. The communication dealt in turn with lisping, falsetto voice, stammering, and cleft-palate speech. Each defect and the method of treatment was illustrated so far as was practicable.

The executive committee of the Brussels Diplomatic Conference, 1935, has received a communication from the fifteenth International Red Cross Congress at Tokyo congratulating the Belgian Government on taking the initiative in calling a meeting aimed at the humanization of war and charging the Red Cross Society to give every assistance. In view of the importance of the Tokyo gathering, this action represents a valuable step forwards towards the realization of the objective of the International Committee of Military Medicine.

CORRESPONDENCE

London University and its Medical Schools

Sir,—The letter of Sir E. Graham-Little in the *Journal* of November 24th (p. 962) raises a point of great interest and importance to medical students and teachers in the University of London. It is, as he points out, a deplorable fact that only a relatively small percentage (56 per cent. in 1932, 59 per cent. in 1933) of the students of medicine of the University who have passed the Second M.B. (anatomy, physiology, biochemistry, and pharmacology) ultimately take the M.B., B.S. degrees, because, as Sir Ernest rightly points out, they are often, on account of economic stress, unable to stay the course.

Now it is probably true to say that practically every medical student of the University, though intending to proceed ultimately to the degree, first takes the qualification of the Conjoint Board (M.R.C.S., L.R.C.P.), which he can do at a somewhat earlier period than he can sit for the degree. This enables him to register and go out and earn some money as an assistant, or perhaps in a practice of his own. In almost every instance he intends to keep up his reading and come back in a year or so and take the Third or Final M.B., B.S. But here comes the difficulty. The Third or Final Examination comprises pathology, bacteriology, forensic medicine and public health, medicine, surgery, and midwifery. Though this can be passed in two groups, one of the groups is composed of surgery and midwifery (B.S.), the other of medicine, pathology, bacteriology, and forensic medicine, including public health and hygiene (M.B.), and failure in one subject of a group means failure in the group. There would be comparatively little difficulty in keeping up the three clinical subjects, and even improving his knowledge of them, for he is in touch with them in the course of his daily work. It is, however, utterly different in regard to pathology and forensic medicine. These are academic subjects with little relation to his daily experience in general practice, and if he is to keep up to examination standard he must do it by a pure "grind." Even that may be impossible, for there is no access to actual pathological material and specimens. Is it any wonder that many give up the struggle and never return to face the Final?

The remedy is, to my mind, simple. Let a third professional examination be instituted, comprising pathology, bacteriology, forensic medicine, and public health, and make it possible for this to be taken, say, at the end of the fourth year and before it is possible to sit for the Final Examination of the Conjoint Board. He would then, no doubt, take the Conjoint Board Examination as usual, but, having already passed in pathology and forensic medicine, would have little difficulty, even though he had gone into general practice, in getting up his three clinical subjects to the degree standard. At least the attempt would not be the hopeless struggle that it is so often at the present time.—I am, etc.,

F. J. Browne.

University College Hospital Medical School, Dec. 6th.

Sir,—The important question raised by Sir Ernest Graham-Little (November 24th, p. 962) is one which in my opinion should receive careful consideration by the University of London. Two important reasons for this have been given by Professor Major Greenwood (December 8th, p. 1072), and need no amplification. There are many other points in its favour, of which I consider the following to be one.

By the time he has reached the Second Examination for medical degrees the student has attended the Univer-

sity for at least two years and two terms, and has passed examinations of a standard comparable with those for the intermediate science examination ; or, alternatively, has actually passed the intermediate science examination at the end of his first year of study. The standard of examination at the Second Medical Examination is, in my experience, at least equal to that of the final general B.Sc. degree, and possibly somewhat higher. If it is objected that three whole years must be spent after matriculation in order to qualify the student for a degree, this could easily be remedied by the addition of a further term of work for those wishing to take the science degree. This additional term could be well spent in further study in either anatomy, physiology, chemistry, biochemistry, or pharmacology, and I would even suggest that the addition of general pathology might be considered. Some such curriculum and degree would have very many things to recommend it, and I have little doubt could, in principle, be made effective.—I am, etc.,

London, N.W.11, Dec. 7th. C. LOVATT EVANS.

Uveo-parotid Tuberculosis

SIR,—It is very gratifying to learn that Dr. Tanner and Mr. McCurry have seen three cases of uveo-parotid tuberculosis since Dr. Thomson and I published our review of this condition in 1933.

An unfortunate state of affairs has arisen, however, with regard to their second case, and it is important that the error should be corrected. This case, which was originally under the care of Mr. R. S. Lawson in July, 1931, is the second case reported by Dr. Thomson and myself in the *Lancet* (October 6th, 1934, p. 743), and the photomicrographs reproduced in the *Journal* of last week are from the same sections as those (Fig. 4) published by us. As we pointed out, this patient had not been seen by us, but we recorded the notes kindly supplied by Mr. Lawson, who also sent us the sections prepared from the parotid biopsy. We communicated with this patient in the summer of 1933, when she said she was then normal in every way. There is no doubt that difficulty will arise in the future as a result of the conflicting statements made by Tanner and McCurry and Garland and Thomson about the same patient, as the former authors state that "tubercle bacilli were demonstrated" in the parotid, whereas we stated that "tubercle bacilli could not be found in spite of the most careful searching." This latter statement was based on the pathologist's report (supplied by Mr. Lawson) and on our own failure to see any bacilli in the sections which we borrowed. Perhaps we were in error, but in any case this fundamental point should be cleared up.

It is interesting to learn that this patient is now developing chronic pulmonary tuberculosis.—I am, etc.,

Leeds, Dec. 10th. HUGH G. GARLAND.

SIR,—I have read with great interest the paper relating to the above condition in the *Journal* of December 8th, including the clinical accounts of three descriptive cases. Several points emerge from the discussion, principally in connexion with aetiology and symptomatology, which, in virtue of their important bearing on the subject-matter, would seem to be worthy of special attention. In passing, it is of interest to note that the disease is one which appears to have a definite affinity for the female sex. Such a statement is ably confirmed in appropriate literature, whilst the three cases described in the text substantiate it. The age incidence seems to favour the period from 20 to 40 years.

One of the most significant findings is that of the demonstration of the tubercle bacillus described in Case 2. Microscopical appearances and post-mortem changes have continually shed grave suspicion on a tuberculous aetiology, but failure to isolate the specific organism has proved a thorn in the flesh to many exponents of this theory. A family history of tuberculosis is not by any means always conspicuous by its presence, though a story of discharging neck glands in youth is often obtainable from patients. Perhaps one of the most constant physical signs is that of enlargement at the root glands of the lungs, demonstrable in skiagrams, and it would appear from the post-mortem results of Souter's case, mentioned in the text, that tuberculous infection can be cited as the cause. With regard to the question raised in the discussion as to whether the prodromal symptoms are due to toxic absorption from such mediastinal adenitis, I am inclined to the belief that the latter is resultant rather than causative. During a recent investigation which I had occasion to make into cases of this malady and Mikulicz's disease, infection of the hilar glands was observed in both diseases. When one considers that little or no constitutional disturbance is witnessed in the latter condition it is difficult to blame mediastinal adenitis for promoting toxaemia in the former, since both maladies bear a striking resemblance to each other.

The conception of a tuberculous infection, gaining entrance by the nasopharynx, mouth, or tear duct, or indeed of familial origin, giving rise to uncomplicated salivary gland enlargement in its latent stage (as evidenced in Mikulicz's disease), and causing constitutional upset in its active stage (as evidenced in uveo-parotid fever), would seem to associate each malady more intimately, and meet the case to the aetiological and symptomatological satisfaction of both.—I am, etc.,

Alloa, Dec. 10th. A. D. MACDONALD, M.D.

Treatment of Haemoptysis

Endotracheal Injections of Adrenaline

SIR,—In their note on pathology and treatment of haemoptysis, published in the *Journal* of October 27th (p. 762), Drs. H. V. Morlock and A. J. Scott Pinchin report to have used the introduction of adrenaline into the bronchial tree both by the nasal catheter and by the cricothyroid route ; however, they do not seem to have been favourably impressed with the efficacy of that treatment. In connexion with these points I would like to state that for ten years the medical clinics under my direction have been using a very efficient method of staying haemorrhage from the lungs. Such method has been devised by a pupil of mine, Dr. Giuffrida, and traces its origin from the studies carried out by my school on a local reticulo-endothelial pulmonary chemotherapy. It consists of injections of adrenaline by the endotracheal superglottic route.

The technique of administration is very simple. A source of light is placed in front of the patient, who puts out his tongue. The operator, standing opposite, seizes the tongue between his left thumb and forefinger, while holding with his right hand a syringe filled with 3 c.cm. of the drug (1 c.cm. of 1 per 1,000 adrenaline diluted in 2 c.cm. of water) and fitted with a cannula of 2 mm. bore and 11 cm. length, bent—at a distance of 7 cm. from the cone—so as to form an angle of 110 degrees. The cannula is introduced by the tongue into the mouth as far as the epiglottis, and the patient is directed to breathe in deeply and slowly. The piston is then *swiftly* pushed down during an inspiration.

The administration of adrenaline often causes coughing, which generally is unlikely to become severe ; moreover, coughing shows that the drug has not been swallowed, but has gone right home. The psychic trauma of haemoptysis abates the pharyngeal reflexivity in a remark-

able way, thus making the procedure easy ; only a small proportion of highly excitable patients require their throat to be sprayed with a 4 per cent. novocain solution prior to injection with adrenaline. The good effects of this method are confirmed in about 90 per cent. of the cases. If necessity arises the administration of the drug may be repeated every twelve hours (or every eight hours in the worst cases) for two or three days.

Italian and foreign experience has amply borne out the value of such treatment, which is often little short of astonishing ; as a matter of fact, it is not an uncommon occurrence for the next sputum subsequent to the injection to be no more blood-tinged. However, the popularity of the method is not, chiefly abroad, on a par with its efficacy, owing, I think, to the misconception that extreme knowledge and delicacy of technique are required. On the contrary, the method stands the test of simplicity.

Quite recently Dr. Pennetti has shown that haemoptysis may be controlled also by a mere endotracheal injection of water, and our contribution warrants such finding, especially in not severe cases. It appears, therefore, that there is a factor of reflex nature concerned too.—I am, etc.,

Prof. MAURIZIO ASCOLI,
Director of the Medical Clinic,
Royal University of Palermo.

Sicily, Nov. 20th.

Short-wave Diathermy

SIR,—I have read with much interest the recent correspondence in the *Journal* with reference to the uses of short-wave therapy, and in addition have received numerous brochures from the makers with the claims of short-wave therapy enumerated. Sinusitis, carbuncles, and neuralgia are three of the conditions which can be benefited. It may be fitting to indicate that many of us engaged in the practice of physical medicine have treated successfully over the years numerous patients suffering from these conditions by means of infra-red and ultra-violet irradiation. Cases of sinusitis require an average of eighteen treatments to cure the condition, provided free drainage can be established by the irradiation. This is indicated by a copious nasal discharge during the initial treatments. One has treated cases of all types, acute and chronic, and in every case not only have the symptoms abated, but the necessity for operation has been obviated. The results should, as far as possible, be verified by an ear, nose, and throat specialist, and by a radiographer. Infra-red rays act by producing a hyperaemia, and this is further enhanced by the application of focal ultra-violet irradiation. The nares and pharynx can be disinfected by the application of the bactericidal rays of the Kromayer lamp, and the external auditory meatus can be similarly treated. General irradiation from a suitable ultra-violet generator should also be administered. My own preference is for the titanium alloy arc. I very much doubt if these results can be improved upon by ultra-short-wave therapy, and if the latter is the method of choice general ultra-violet irradiation should also be given as an adjuvant in every case.

In a patient recently treated and referred to me by an ear, nose, and throat specialist every sinus was involved. His general condition precluded operation. As a result of treatment on the above lines symptoms of pain and tenderness have disappeared, chest symptoms have cleared up, and he has gained 14 lb. in weight in six weeks. This latter fact indicates the " passing " of a septic condition, as also does the amelioration of the secondary symptoms resulting from toxic absorption from infected sinuses.—I am, etc.,

W. ANNANDALE TROUP, *M.C.*, M.D.

London, W.1, Dec. 7th.

SIR,—There is rapidly increasing evidence of the value of short-wave therapy ; but if the development of this form of high-frequency currents is to be based upon a scientific rather than upon an empirical basis, the co-operation of the physicists and the biologists with the electrotherapists is urgently needed, and is, indeed, much overdue.

The high-frequency currents of quantity (diathermy) evolved from the high-frequency currents of tension (d'Arsonval), and now the high-frequency currents of resonance or syntony (short-wave therapy) have in turn evolved from the high-frequency currents of quantity. This process has occurred as the result of instrumental development involving most difficult and intricate electrical problems, for the solution of which the aid of the electrical physicist is absolutely essential. Though these three forms of high-frequency currents merge one into the other by imperceptible gradation, the characteristic clinical and biological action of the three is widely different. The electrotherapist requires the assistance of the biologist to reveal the fundamental nature of these differences. But it is not only in reference to the high-frequency currents that this associated investigation is required ; there are very many problems of electrotherapy that would be much advanced by the co-operation of the biologist and the physicist with the electrotherapist.

Surely the investigation of these problems is worthy of the consideration of the Medical Research Council. Would it not be possible for the National Physical Laboratory or some other body to assist us by demonstrating the relative merits of spark-gap and valve machines for the generation of short-wave high-frequency currents, and also to show us, as the result of their investigations, how the physical properties of high-frequency currents alter as the frequency increases and the wave-length shortens?—I am, etc.,

W. J. TURRELL.

Oxford, Dec. 9th.

Transport of Cases with Back Injuries

SIR,—In your account (*Journal*, December 1st, p. 1012) of the discussion on this subject at the meeting of the British Orthopaedic Association you mention that I supported the recommendation of Mr. McMurray, but you do not give my reasons. May I state them now?

In the first place, it is necessary to get rid of several misconceptions which seemed to vitiate the discussion. (1) That a man injured in a coal mine is carried away by his companions just as he is, without being first put on a stretcher. (2) That fractured spine of the character under discussion is always liable to be complicated by injury to the spinal cord. (3) That a fall of rock or coal always doubles a man up, causing exaggerated flexion of the spine, which should be treated by hyperextension. (4) That fractured spine is an injury by itself, and is not accompanied by other injuries to ribs or limbs or pelvis.

The true facts are: (1) That there is *always* a stretcher at the coal face, and that the man is *always* placed on it before being carried to the ambulance room. (2) That injury to the spinal cord does not occur in more than one in ten of the cases. (3) That whether the man is doubled up or not depends on which part of the back is struck. If it is struck high up between the shoulders the man is undoubtedly doubled up, forced flexion occurs, and the twelfth dorsal or first lumbar body gives way, causing kyphotic deformity. But if he is struck low down in the lumbar region instead of being doubled up he is hyperextended, producing fracture of the third or fourth lumbar body with displacement forwards, the treatment of which should be flexion, not extension. (4) That fractured spine is very commonly accompanied by other injuries.

I supported Mr. McMurray in condemning the prone position at the coal face because of the above facts, and because, even if certain cases may be benefited by it, a large number of complicated cases will be rendered much worse, and a correct decision as to which position should be adopted can only be come to after a careful *x*-ray examination. I submit that the best first-aid treatment is to clear the rock and coal away, lift the man on to the stretcher in the usual manner, carry him to the ambulance room, and get him off to hospital as quickly as possible.—I am, etc.,

North Staffordshire Royal Infirmary, Dec. 6th. PAUL BERNARD ROTH.

Obstetrics in India

SIR,—I have read with interest the article in your issue of December 8th (p. 1060) on obstetrics in India, by Dr. Rufus Thomas, and should like to congratulate him on the energy and vivid language with which he describes the conditions in Jamnagar, which I fully believe he has not exaggerated. At the same time I should like to make a few further remarks.

The conditions Dr. Thomas describes were once universal, and still prevail in many parts of India, but efforts made during the past fifty years, and especially during the past twenty, have done something to mitigate them. It was these conditions which led to women medical missionaries opening work in India, and which caused Lady Dufferin to organize her fund for providing medical aid by women in 1885. Women doctors were brought out from England, training of nurses and midwives was begun, and, later, Indian women were admitted to the medical schools and colleges. In 1903 Lady Curzon organized a fund for training indigenous dhais, and in 1921 Lady Chelmsford a similar fund for maternity and child welfare. All these charitable funds were far too small for the purpose. In 1914 the Government for the first time made a grant to the Dufferin Fund, which made it possible to open a small women's medical service, and placed the relief of women on a sounder footing, although still a very inadequate one. Since 1915 modern child welfare has made its appearance in India, and there is now an All-India Bureau of Maternity and Child Welfare in connexion with the Red Cross, and with a medical woman as director. Infant welfare centres are multiplying, and ante-natal work is getting known. Seven training schools for health visitors are established in different parts of the country. The workers trained in these have a midwife's as well as a health worker's training. The endeavour is to plant them out in different areas under local bodies or charitable organizations to help mothers and infants, and especially to teach the indigenous dhais and keep their work under supervision, because it is now recognized that it is hopeless to expect illiterate women to carry out what they have been taught in the way of cleanliness and antisepsis when there is no public opinion to require it, unless they can be kept under supervision.

It would, of course, be better to replace these dhais by midwives of a better class, trained, and at least partly educated. This is being done successfully in some parts of the country, but in other parts there are almost insuperable difficulties. Women in the more backward areas prefer the dhai, and will not employ the trained midwife. Midwives, after training, tend to gravitate to the large towns, where fees can be obtained, and it is difficult to get them to work in small towns and villages. Then the class of educated women to draw on is small. True, as Dr. Thomas suggests, there is the class of Hindu widow, but only a proportion of this class is allowed to work, and they are much in demand for teachers and nurses, both of which are more popular professions than midwifery. It must not be forgotten, in reviewing the causes of maternal mortality in India, that a great part of it is due to disease as well as to bad attendance. Osteomalacia is rife in some parts of the country, and pernicious anaemia in pregnancy is a frequent cause of death. Premature birth leads to much infant mortality.

It cannot be stated too strongly that, in spite of the efforts made, conditions such as Dr. Thomas describes are still prevalent over large parts of British India and the Indian States. It is impossible in a letter of this nature to go further into the matter, but it does seem as if, in spite of energy, hard work, and enthusiasm of workers, too little has been accomplished. The Government has too much taken the attitude that childbirth is a domestic subject not to be interfered with. It has left the campaign too much to charitable organizations, whose funds were not enough to deal with one-fiftieth of the country. Indian local bodies have shown themselves slack and uninterested; Indian women have not until quite recently been represented on them, nor had they formerly knowledge as to what was needed. Government, lately, has shown more interest, but there is still the attitude, as expressed by one Government officer some years ago, "Women's work is, of course, very desirable, but it is a luxury"—so to be dispensed with when retrenchment is needed. Many instances could be given.

What is needed is a much larger vision on the part of the authorities—a realization that the present conditions of childbirth not only cause untold suffering to hundreds of thousands of women, but that they handicap the rising generation with weakness and poor physique at a time when India particularly needs strength—mental and physical—for its people.—I am, etc.,

Upper Norwood, Dec. 11th. MARGARET I. BALFOUR.

Surgical Diathermy for Cervicitis

SIR,—Mr. J. C. Ainsworth-Davis's article (November 24th, p. 935) on surgical diathermy for cervicitis must have aroused interest in a subject which is rather backward in this country. Having failed to get satisfactory results myself with medical diathermy, I was impressed by the writings of Hyams on his treatment with surgical diathermy. This was one of my reasons for deciding to visit the U.S.A. in 1931, and for starting a clinic at Charing Cross Hospital for the treatment on my return. There is a good deal to learn in this method, and I did not consider I had sufficient experience after four years' work to bring the subject to any very general notice, though I have referred to it in post-graduate lectures and medical addresses.

The soundness of the method lies on its pathological basis. A purely surface infection of a mucous membrane composed of compound racemose branching glands is a pathological impossibility, and in the case of the cervix uteri, like that of other mucous membranes, the idea of a "surface infection" is giving way to a more rational view. In the cervix uteri there is (1) a surface infection which gives rise to discharge and its sequelae; (2) interstitial infection of the deeper tissues which reaches up to the level of the internal os itself, and which is responsible for the metastatic symptoms in joints, etc.—an infection under tension of the tissues. It is this which all superficial forms of treatment fail to eradicate, and likewise trachelorrhaphy or amputation. Another aspect of the pathology is the bearing of the cervical infection on puerperal infections. I think the argument is incontrovertible that a great deal of puerperal infection does arise from an opening up of this infection in the process of labour, but as a lymphatic, not a surface, spread. I think a distinction has to be made between these cases and the mere carrier of streptococci in the cervix and its environment, whether they are haemolytic streptococci or not. The latter, I believe,

are in labour entirely harmless to the subjects themselves provided there is no local trauma of tissues, and in such cases I have proved it is safe to perform even a bougie induction of premature labour.

In quite a different category is the woman who has an infection of her cervical tissues (and they are far from uncommon). This type of case I treat with a modified surgical diathermy as late as the thirty-sixth week of pregnancy, and do not allow them to have their labour in the ordinary labour wards, because they are a risk both to themselves and to other patients. I think it is a failure to recognize this principle in pathology that is one of the weakest points in ante-natal work as often carried out. Many of these women have developed a natural immunity to their infection, so that their labour may be attended by nothing more than a morbid puerperium, provided there is no *locus resistentiae minoris* caused by local trauma in the delivery. But I do not know of any means of distinguishing them from those in which a general infection from the lower uterine segment and its attendant sequelae will occur, as was shown by Whitridge Williams long before many of us were born. In technique it is important to avoid, as far as possible, removal of tissues deeper than the mucous membrane (and for this reason the " coniser " is better than a loop), otherwise the early result will be serious haemorrhage and the late result stenosis of the canal.

My experience of cases I did four years ago leads me to believe that it is very necessary to adopt measures to keep the cervix dilated for a time after treatment, otherwise severe dysmenorrhoea may occur as a late sequel. Dr. Agnes Savill has called attention to another point, and that is coincident infection of the corpus. This I believe should be dealt with in the first place before the cervical condition is touched, and I adopt the extremely simple manœuvre of intrauterine injection of glycerin and mercurochrome—a modification of Remington Hobbs's principle—if there is any clinical evidence of infection in the corporeal part of the membrane. In conclusion, I should like to take this opportunity of expressing my thanks to the council of the hospital for purchasing for me the very expensive plant, and to my colleagues on the staff of the hospital for the opportunity of enlarging my experience by the study of their cases.—I am, etc.,

London, W.1, Dec. 10th. EVERARD WILLIAMS.

Autotransfusion in Ruptured Ectopic Gestation

SIR,—In the *Journal* of September 8th (p. 470) Dr. M. W. Renton recorded a case of traumatic rupture of the spleen in the treatment of which autotransfusion was used. Whilst agreeing heartily with him that this procedure is at times of great and life-saving value, I should like to point out that indications for its use are necessarily limited. Its employment is at present almost restricted to cases in which safe blood can be recovered from the peritoneal cavity, with the possible exception of blood aspirated from the pleural cavity in cases of trauma to the thorax—and then only if the blood is uncontaminated by alveolar air.

It is obvious that intraperitoneal blood in cases of damage to liver, kidneys, or intestinal canal is unsafe: even more so would be blood that had passed through the vagina in cases of ante-partum and post-partum haemorrhages—suggested by Dr. Renton as suitable for this procedure. Happier indications, however, are haemorrhages in conjunction with splenic damage, some gynaecological operations, and above all with ruptured ectopic pregnancies. For the treatment of the urgent secondary anaemia following ruptured extrauterine pregnancy the method has been extensively used with excellent results. It permits of a minimum of delay (the transfusion being carried out concurrently with the operation), the technique is very simple, and the effect rapid and satisfactory. Still, it is necessary to bear in mind that disasters have been recorded, and that autotransfusion should not be made a routine procedure even in ruptured ectopic, but be employed only when indicated by the patient's condition.

As an example of its use in gynaecology, may I mention a case of extensive myomectomy with severe blood loss. This operation can be performed with little loss of blood by using either a Bonney's clamp or a diathermy knife, but if neither of these is available it is a wise precaution to preserve and citrate the blood for return to the systemic circulation if the patient's post-operative condition suggests the need.

It may be of interest to record that some years ago I made some inquiries into the state of the blood in cases of intraperitoneal bleeding from ectopic pregnancies. With the assistance of a haematologist information was obtained that indicated that: (1) Fluid blood removed from the peritoneal cavity is, before citration, in a sufficiently normal condition to be safely used for transfusion. (2) The same blood after citration undergoes a lysis amounting to about 5 per cent. of its haemoglobin content, and is still a safe fluid for transfusion purposes. (3) The results of repeated van den Bergh tests showed that there was no breakdown of the red corpuscles after their return to the systemic circulation.

Whilst thoroughly endorsing the value of autotransfusion, it is, I think, necessary to repeat that, since no transfusion, auto- or hetero-, is entirely free from risk, the procedure should be used only when definitely indicated, and not as the routine it is tending to become in cases of ruptured ectopic gestation.—I am, etc.,

J. B. DAWSON,
Professor of Obstetrics and Gynaecology,
Dunedin, Oct. 18th. University of Otago, New Zealand.

Maternal Mortality

SIR,—The *Journal* issues of November 24th and December 1st contain matter of great interest to all who are concerned about the question of maternal mortality (and how many of us are not?). The divergence of opinion expressed only serves to increase that interest.

Mr. Aleck Bourne's plea for the abolition of the pelvimeter will not, I imagine, receive much support. It has already drawn a reply in the negative from Professor R. W. Johnstone. I always looked upon the use of the pelvimeter as the first step in my examination of the pelvis, but always with the realization that the information gained was not " accurate " in the strict sense of the word. At the same time, any marked departure from the normal served as a warning to me to observe greater care in making my internal digital estimation of the size and shape of the true pelvis. That the external measurements, as determined by the pelvimeter, were normal did not make me consider that internal examination was unnecessary. Both are surely necessary steps in the same attempt to assess the size of the pelvis, and as such are to be considered jointly in the light of the total information derived therefrom. In regard to the intertuberischial diameter, I would much prefer to rely upon that obtained by a pelvimeter than trust to the " knuckle test," if compelled to choose between them. I should be very shocked if I thought that such an operation as Caesarean section might be performed on the findings of external pelvimetry alone, nor can I think that internal examination, which takes such little time, but yields such valuable information, is as neglected as Mr. Bourne would seem to suggest. Dr. W. R. Mackenzie, in supporting Mr.

Bourne, goes to the other extreme, and condemns all pelvimetry, whether metallic or digital, external or internal, saving only that afforded by the roentgenogram. I can pay no higher tribute to the value of *x* rays than to say that from about 1923 I made it a practice, whenever possible, to have at least two radiographs, one at eight months, the other as near term as practicable. In many cases earlier radiographs were taken as well. It is impossible to exaggerate the value of such a procedure, affording as it does such a variety of information. But all this should be taken in conjunction with the knowledge gained by the other methods of pelvimetry, and should not displace them. I would go so far as to say that no ante-natal examination is complete without these two radiographs. Incidentally, may not the time come when a disgruntled husband will sue an obstetrician on the ground that he did not have an *x*-ray photograph taken? If such an action could succeed in the case of a fracture, why not in the case of a pregnancy? The possibilities are enormous.

In the *Journal* of December 1st (p. 1010), in your report of the meeting of the Royal Society of Medicine, which discussed ante-natal care and the maternal death rate, Dr. T. J. Hollins is reported as believing it possible "to tell with exact certainty the presentation, size of child, relative size of head and pelvis, and internal measurements of pelvis by the aid of *x* rays, and that *x* rays should be used in all cases of primiparae and in those cases of multiparae in which there had been trouble in a previous confinement." My own experience leads me to agree with him. Later in the same account Dr. A. J. Wrigley is reported as having "crossed swords with Dr. Hollins over the value of *x* rays in ante-natal examination. Radiology was of little help, and the radiologist himself admitted it." It would be interesting to know how many obstetricians would subscribe to this view. And does the radiologist himself admit it? How many have done so, and on what grounds? And is radiology taken advantage of in ante-natal clinics to the extent that it ought to be? I doubt it.

In the same report Professor F. J. Browne's scheme for a whole-time maternity service does not appear to have received the support it deserved. In my humble opinion it is the best solution to the problem of maternal mortality yet put forward. His statement that admission to hospital often means treatment by a house-surgeon, often without supervision, is no more than the bare fact. He might have gone further, and said that the house-surgeon often had no more experience than that gained in his "twenty cases" as midwifery clerk during his hospital training. How many times during the course of this training is a student taught how to put on forceps, with the living subject as the model?

Dr. G. W. Theobald is reported, on page 1011, as stating, "as for the toxaemias of pregnancy, there was not the slightest evidence that ante-natal care could affect the death rate." I must confess I do not understand this statement. Perhaps Dr. Theobald will kindly state what he understands by the term "toxaemia of pregnancy," and what conditions he would include under the term. Would he include "hepatic eclampsia" or "nephritic eclampsia," or the form of hyperemesis gravidarum which is accompanied by such urgent signs as jaundice, albuminuria, and great prostration, and followed, if untreated, by coma and death? In all these conditions are found (post mortem) changes in liver and kidneys, suggesting grave toxaemic influences. Has ante-natal care no part in the early discovery of such conditions, and has treatment no effect on their course and ultimate result? In Dr. Theobald's account of the obstetric methods at St. Mary Abbots Hospital (*Journal*, November 10th) he states that eighty patients were admitted into the ante-natal ward because of toxaemic symptoms, and that all the mothers save three went out with living infants. In his case records he gives details of a patient with eclampsia who died, the liver showing the classical lesions. This would appear to have been a case of "hepatic eclampsia." The tone of this case record seems to suggest regret that she did not come into hospital ten days before, for he says, "she did not come into hospital until ten days later, during the whole of which time she had been ill." Was this a case of toxaemic eclampsia? If so, would her admission ten days earlier have made any difference to the result, if we accept Dr. Theobald's contention that ante-natal care has no effect on the death rate? Personally, I do not accept it at all. It would be of interest to know how many obstetricians would agree with such a sweeping assertion.—I am, etc.,

RUFUS C. THOMAS, F.R.C.S.Ed., M.C.O.G.

Newton, Porthcawl, Dec. 5th.

SIR,—I think that the time is now opportune to quote some figures of a large maternity hospital. During the last few months both the medical and the lay papers have contained numerous references to the maternal mortality from childbirth, and, although statistics are not a true indication of an institution's worth, they are the only means of conveying to those outside the results of the work carried out in the hospital.

Admissions into the Leeds Maternity Hospital are divided into two types—namely "booked" and "emergency." The former class consists of all patients who have made at least two attendances at the ante-natal clinics, and thus may include many abnormal obstetrical conditions. During the year 1933 there were 1,757 such admissions, and only one mother died. (This patient was admitted with an empyema following an attack of influenzal bronchopneumonia.) The death rate of the hospital's own booked cases was thus 0.595 per 1,000 live births—nearly nine times less than that of the country as a whole. Of the emergency admissions twenty-three women died, and of these eight were admitted after delivery. In the preceding year the "booked" maternal mortality was 1.3. These figures, including as they do over 3,200 deliveries, are, I feel sure, an excellent example of the value of large maternity hospitals; they also indicate that where such an institution shows in its report a maternal death rate far in excess of the average figure it is entirely due to the emergency admissions.

Another interesting point discovered in the records of last year's deliveries is that no fewer than 1,807 out of 2,073 mothers were given a general anaesthetic for the actual delivery of the child, and that in 689 cases an attempt was made to make the whole of the labour painless.—I am, etc.,

DAVID W. CURRIE, F.R.C.S., M.C.O.G.,

Nov. 26th. Registrar to the Leeds Maternity Hospital.

SIR,—The debate on the above subject still rages in the medical and public press, and the utmost confusion prevails. There seem to be two aspects to the problem: the one of a general survey of total results over a period of years, and the other the personal one based upon personal experience.

In the *Journal* of November 24th (p. 948) is a report of a meeting at which the subject for discussion was "Has Ante-natal Care reduced Maternal Mortality?" Dr. G. F. McCleary, after some juggling with numerators and denominators, etc., is reported to have said: "With all these allowances, however, the figure for maternal mortality is intolerably high." It is practically certain that widespread ante-natal supervision during the last fifteen

years or so has not reduced maternal mortality as a whole, and to a logical mind it has therefore failed in its purpose. Theoretically, ante-natal supervision is sound practice, and the unpleasant results of it must be due to one (or both) of two reasons. Ante-natal care has been incompetent and the forecast of labour inaccurate, or the treatment of some supposed abnormality discovered ante-natally has been unfortunate in its results—in other words, the treatment was worse than the disease. There can be no question that ante-natal care, and also the conduct of labour, require a high degree of manual dexterity and practical skill in estimation. I do not think it impertinent to ask: "Can any examination, even the M.C.O.G., decide the practical worth and ability of a candidate?" If the reply is that no examination attempts to estimate practical ability—and I am led to that conclusion—then there is no diploma which qualifies a person to undertake ante-natal care or midwifery on a large scale.

With regard to any labour *per vias naturales*, a question yet to be decided is whether it is safer in the patient's own home or in a hospital. It is significant how often the haemolytic streptococcus finds its way into hospital cases. It is amazing what can be successfully accomplished in a patient's home under very bad conditions and a paucity of facilities. Great care should be taken in apportioning blame on a fatal case which has been transferred from home to hospital. I think it is very doubtful if any confinement is ever conducted without the mother being "infected" to some degree, and I think it is prudent to ask whether it is better for her to be infected with the organisms of her own home, to which she has had some opportunity of acquiring immunity, or to be infected with the organisms of hospitals, probably of a more spartan type, to which she may have no immunity.

I believe the act of transference often weighs heavily against the patient, and I note in the *Journal* a recent discussion on placenta praevia. Without taking sides as to treatment, it is significant that W. J. Young describes a series of cases (twenty) treated at home without a fatality, and J. Stanley Coleman quotes three cases ending fatally but all transferred to hospital. When investigating personal experience it is very difficult to prove or disprove anything by statistics. I noted that E. Lawton Moss struck a bad patch with concealed accidental haemorrhage. A single "snag" can spoil the figures of a general practitioner covering a period of years. The statistics of Dr. G. W. Theobald and those mentioned by Lawton Moss are excellent, and yet their respective techniques are widely different. The suggestion that a record of a temperature of 98.4° F. in the puerperium is pathological rather staggers one, as most people look upon a temperature of 99° or so after delivery as quite physiological—or shall I say, provocatively, defensive.

Mr. Bourne suggests that the pelvimeter should be abolished, but surely it is not the pelvimeter that is wrong; it is the conclusion that is drawn from its use that matters. I was taught twelve years ago that it should only be used as a guide. Does Mr. Bourne seriously believe that the decision to do a Caesarean section is ever made on the findings of a pelvimeter, and that alone? With regard to the value of an internal examination, "obstetric specialists" seem to contradict each other, as with several other ideas in obstetrics, and naturally the general practitioner has to make conclusions for himself. The whole matter boils down to the fact that obstetrics is not a science but an art. A doctor can only become a craftsman in this art in the usual way—experience. On the question of experience Dr. Theobald's suggestion is right, though, so far as I can see, my four years' hospital experience in midwifery is of little advantage to me in general practice.

To conclude, I suggest, in view of the diversity of opinions on ante-natal treatment and its efficacy, that all ante-natal clinics should be converted into albumin-testing centres, and let the emergencies be dealt with when they arise.—I am, etc.,

Wembley, Dec. 2nd. J. SHIRLEY CALLCUTT.

SIR,—Is it not time that serious attention was given to the comparability of the maternal mortality statistics? Professor Johnstone in his letter (*Journal*, December 1st, p. 1014) suggests that another era of "national hysteria and panic" is upon us. It is universally agreed that crude death rates may mean nothing, yet (so far as I am aware) no serious attempt has been made to "correct" the maternal mortality rates for the purposes of comparison between one area and another. Amongst other factors crude death rates should be "corrected" for primiparity and for extreme multiparity. Furthermore, the steadily advancing age of child-bearing mothers and of primiparae especially ought to be regarded. Examination would show that there is a higher puerperal mortality among child-bearing women over 35 years of age.[1]

I suggest that social changes of the last twenty years are such that we ought to expect a rising crude maternal mortality. If it is stationary, that indicates an improved obstetric service. If Sunderland shows better "crude" rates than Bournemouth, may it not be that the corrected or standardized rates for these areas would reverse the position? I imagine that primiparae and small families are as common in Bournemouth as the reverse is common in Sunderland. This is a matter of more than academic importance. It affects the morale of child-bearing women and the morale of the profession. Moreover, "blunderbuss" methods of seeking a cure are likely to be *very costly and very futile*. Consider, also, the effect of puerperal sepsis upon crude rates of maternal mortality. Sepsis is an *infectious disease*, and will not be greatly controlled by "clinics" *per se*. In some areas *the* maternal problem is sepsis. In that case "hospitalization" is dangerous. Puerperal sepsis rates rise and fall with the prevalence of certain streptococcal epidemics. This point may be checked statistically.

The whole matter is much too complex and too important to be dismissed lightly. Cannot a careful statistical inquiry into puerperal death rates be made and a serious effort to "standardize" them be instituted?—I am, etc.,

HOWARD E. COLLIER,
Department Industrial Hygiene and Medicine, Birmingham University.

December 5th.

Anaesthesia in Maternity Cases

SIR,—Dr. Arthur Campbell's letter on the above subject in the *Journal* of December 1st (p. 1016) is very much to the point. For many years I used an almost precisely similar home-made apparatus. I usually started the anaesthesia, and later gave the bulb to the patient to compress by her own hand. Patients know at once when they feel the oncoming signs of uterine contraction, and by a few squeezes of the bulb procure for themselves the slight unconsciousness which tides them over their pains without in any way interfering with the progress of delivery. As soon as they have had the requisite amount of chloroform their hand automatically relaxes its hold. The practical answer to this method is that in over thirty years' experience I never had a death or a complication in any way attributable to chloroform.

What a simple and safe process this is compared with the cumbrous apparatus, even though it has been whittled

[1] "Social Changes and Maternal Mortality": H. E. Collier, *Journ. Obstet. and Gynaecol. British Empire*, 1930, xxxvii, 27.

down to 15 lb. weight, that is now being brought into vogue! As Dr. Campbell says, if you begin with small doses and very gradually increase there is no danger at all. This method permits the accoucheur to give his whole attention to the perineum and the other management of delivery with only a mere glance at the patient. If she has not got enough she will very soon make it known, and if she has, her hand will be lying idly beside the uncompressed bulb.

No drug has yet been invented that will beat chloroform as a safe and efficient anaesthetic agent in midwifery, if properly administered in the way indicated by Dr. Campbell.—I am, etc.,

Edinburgh, Dec. 3rd. G. D. G.

Medical Benevolence

SIR,—No one having questioned the fact that those lay men and women who are intimately associated with the administration of the affairs of the medical profession have a moral right—nay, duty—to give their support to the Royal Medical Benevolent Fund, it may be asked, How can this be accomplished?

It could be very successfully done by the formation of a lay associates' guild, open to those whose salaries range from £250 a year upwards. There are, I believe, some 2,000 men and women working in the hospitals, colleges, schools, and research institutes of this country who would, I am confident, be only too happy to be given an opportunity of assisting to lighten the burden of the doctor and his dependants, upon whom—such being the nature of his duties—tragic misfortune all too frequently falls. A graduated subscription from this source should produce at least £1,500 a year—a very useful addition to the revenues of the Royal Medical Benevolent Fund. Incidentally, it would mean to the subscribers only the smoking of one packet of cigarettes a week less for the men and a theatre seat or a bottle of perfume less once a month for the women.

To limit subscriptions to those who have taken the Hippocratic oath does not seem right in these days when there is so much distress about. Furthermore, the sister professions of law and theology have in recent years both opened their doors to outsiders.—I am, etc.,

London, N.W.3, Dec. 8th. "FAIR PLAY."

Discoverer of Cortical Rhythm

SIR,—Some recent newspaper articles have given a sensational account of the investigations which we have made in Cambridge on the electrical changes taking place in the cerebral cortex. In these articles we are deeply concerned to find ourselves credited with the discovery of the rhythm which can be detected from the human brain by electrodes applied to the scalp. This is an important discovery, but it was made six or more years ago by Professor Hans Berger, director of the Psychiatric and Nerve Clinic at Jena, and has already formed the subject of eight papers by Professor Berger.

We have repeated and confirmed many of Berger's observations: our interpretation of the rhythm differs in some respects from his, but we wish to make it clear that our own work is of recent date and is in the main confirmatory, whereas Berger has already made a detailed study of the cortical rhythm in a very large number of cases, and has shown the effect of mental work, external stimuli, sleep, drugs, etc. We hope that a forthcoming paper by us, in *Brain*, will remove the impression that we are in any sense the discoverers of the Berger rhythm, and of its modification by mental processes.—We are, etc.,

Physiological Laboratory, Cambridge, Dec. 3rd. E. D. ADRIAN. BRYAN H. C. MATTHEWS.

Obituary

LORD RIDDELL

Lord Riddell died on December 5th. The event has called forth an immediate volume of unqualified appreciation of his work and character, and a testimony of widespread affection such as rarely marks the passing of a public man. No doubt this manifestation is partly due to the fact that his was such an outstanding figure in the sphere of journalism and in the newspaper world. Lord Riddell's interests were, however, very varied, and none of them was superficial. Not least among them were those on the fringe of the profession of medicine—medical charities, medico-legal matters, and other subjects of a medico-sociological character. His loss will be severely felt, not merely by many members of the medical profession with whom he was on terms of individual friendship, but by numbers of others who appreciated very highly his sympathetic interest in their affairs, and who must now feel that a valuable influence and link between the profession and certain spheres of public life has been severed.

Born in 1865, Lord Riddell died in his seventieth year. It is during his last decade that his interest in these medical matters has been so definite, and that recognition of this interest has been so marked. Since 1925 he has been president of the Royal Free Hospital, and since 1930 the chairman of the London Voluntary Hospitals Committee. From 1930 to 1933 he was president of the Medico-Legal Society. In its Centenary year (1932) the British Medical Association elected him an honorary member, and about the same time he became an honorary Fellow of the British College of Obstetricians and Gynaecologists. In none of these spheres did he take his office as a sinecure, and to none of these honours was he indifferent or unappreciative. His interest was active and his work was hard as president or chairman. Especially will the Royal Free Hospital feel his removal. One evidence of his connexion with this institution was his short biography of Dame Louisa Aldrich-Blake. He is said to have himself given some £100,000 to the hospital, and it was through his influence that the late Mr. Eastman gave £220,000 for the foundation of the dental clinic associated with it. But beyond this it may be said to be his beneficent zeal and his organizing ability and business acumen which have raised the Royal Free Hospital to its present high position. He was really proud of his honorary membership and fellowship of medical associations and colleges, and used to declare (after dinner) that they brought him fame, especially as an obstetrician, and requests to take an active and responsible share in the practical daily work of his new profession. As a member of the British Medical Association he did not fail to wear his badge on appropriate occasions, and at least once he insisted on attending a meeting of the Division of which he was, by residence, a member.

There is no need to repeat here the details of Lord Riddell's achievements in other spheres. Without any of what are usually regarded as youthful advantages, his career was, almost from the beginning, an outstanding success, first as a solicitor, especially with regard to Private Bill legislation; then as a journalist and newspaper proprietor, notably in the case of the *Western Mail* and the *News of the World*; then as controller of a great publishing firm, George Newnes, Ltd.; then, both during the war, the peace negotiations, and the Washington Naval Conference, as Press liaison officer and publicity agent, performing a great national service. His work in these matters is recorded in a delightful and interesting

manner in his recent volumes the *War Diary* (1931), the *Diary of the Peace Conference and After* (1933), and *More Pages from My Diary*, dealing with the pre-war period and published this year.

Lord Riddell's was a most attractive personality—simple, shrewd, helpful, kindly. In conversation he was always interested and interesting, and became one of the most welcome after-dinner speakers. His baronetcy came to him most deservedly in 1918, and his peerage in 1920. He leaves a widow, but had no children.

ROBERT FLETCHER MOORSHEAD, M.B., B.S.

Medical Secretary, London Missionary Society

We regret to announce the death, at the age of 60, of Dr. R. F. Moorshead, who was for more than thirty years the medical secretary of the London Missionary Society. Born in Bristol in 1874, he obtained his medical education at the Bristol Medical School and at St. Bartholomew's Hospital. He graduated M.B., B.S. Durham in 1898, taking the conjoint diploma a year later, and the F.R.C.S. in 1903. We are grateful to a correspondent ("G. B. P.") for the following account of his missionary and other activities.

From the days of Livingstone the annals of medical mission work abroad have a roll of honour, increasing in length, of medical men and women. These, so well qualified to win high positions in their profession, devoted themselves and their talents to the outstanding needs of far distant races and peoples, by whom the blessings of modern medicine and surgery were almost unrealized, and whose lives still needed the moral and spiritual inspiration of the Christian faith. On such a roll Fletcher Moorshead's name should surely be placed, though the sphere of his life lay mainly in the home country. For over thirty years he spent his life on behalf of the Medical Mission Auxiliary of the Baptist Missionary Society; an auxiliary which, in association with the late Dr. Percy Lush and the late Sir Alfred Pearce Gould, he helped to found in 1902, and for the remarkable growth of which he was mainly responsible since that time. So striking has been the interest and support that Moorshead elicited throughout the Baptist community that there are now established in India, China, and Africa sixteen hospitals with 900 beds, and a staff of thirty European and eleven native qualified doctors, assisted by thirty-four European nurses and 234 native hospital assistants and nurses. Tremendously keen on his professional work, and hoping at one time to spend his life in the foreign field, he realized, shortly after qualification, the need of his Society's Home Base in the formation and development of its medical department. For this object he readily sacrificed his personal and medical ambitions, to assume the arduous, exacting, and meticulous work of medical secretary.

As already indicated, his success in this sphere has been widespread and permanent, and his life's labours and influence find a lasting record in the creation and development of hospital buildings and centres of healing in many lands. On behalf of his Society and work he visited India in 1905–6, and China in 1919–20, and many recall the inspiration which he left behind when making these tours. His writings mainly dealt with medical mission subjects. He was the author of *The Appeal of Medical Missions; The Way of the Doctor; Heal the Sick: 25 Years of B.M. Missions;* and edited, in recent years, *Conquest by Healing*, a monthly journal. Latterly his health had given rise to anxiety, and he was expecting to retire in two years—after thirty-five years' service—but, following a recent strenuous round of public engagements in Scotland, he suddenly developed double pneumonia, and despite all remedial efforts he passed away, after a week's illness, on December 4th, leaving a widow, with whom widespread sympathy will be felt.

Fletcher Moorshead's memory will be treasured, not merely for what he accomplished, but also for his personality. He never considered himself—generous to a fault when any effort or help was sought from him; of a friendly and sociable disposition, which secured for him friends wherever he went, he was also an effective public speaker in the cause so close to his heart. He has lived, and with success; he leaves a world strengthened by his presence, his ideals, and the memory of a life devoted to the highest ends.

ALEXANDER ARTHUR MACKEITH, M.B., C.M.

On December 5th the medical profession in Southampton lost one of its best-known and honoured members by the death, in his 69th year, and after a long illness, of Dr. A. A. MacKeith. Dr. MacKeith, who graduated M.B., C.M. at Glasgow in 1887, came of a family of doctors. He practised for some years in Exeter and Ilfracombe before he settled in 1900 in Southampton, where he conducted a successful practice for many years.

An energetic and practical man, he was always in the forefront of the most important affairs of the profession, both locally and nationally. He saw the importance of a strong, representative professional body, and devoted years of a busy life to the British Medical Association, which he served as a representative of the Southampton Division, and as president of the Southern Branch (1921–2). To his credit stands the inauguration of such important institutions as the Southampton Public Medical Service, one of the pioneer schemes and now a model for numerous similar services, and the Hospital Contributory Scheme in Southampton, for whose constitution and inception he was mainly responsible—he remained its vice-chairman until his death. He was chairman of the Committee of Management of the Free Eye Hospital for ten years, and remained on the committee till his death.

Dr. MacKeith was a surgeon major (T.), and was attached to the Heavy Brigade, R.G.A. During the war he was P.M.O. Troops, Southampton, and medical officer to the prisoner-of-war camps. It is characteristic of his energy that within a few hours of the outbreak of war he had organized and launched a medical war emergency committee, which arranged for the conduct of the practices of doctors on active service. His work in this respect was gratefully acknowledged by his fellow practitioners, who showed their recognition by presenting him with an illuminated address and a silver salver. He took a keen interest in the work of the St. John Ambulance Brigade and Association until his death. A man of logical mind, with a keen insight and the power to take the long view, MacKeith was a good and just negotiator, a man whose integrity was his most outstanding virtue, coupled with cautiousness and gentlemindedness, round which all other manly virtues fitly clustered—a friend and counsellor, whose loss is deeply felt by his patients, his colleagues, and his fellow citizens.

He leaves a widow and ten children, with whom the deepest sympathy is felt. Four of his sons are doctors, who, as they reached years of maturity, have achieved success in the profession.

THE LATE DR. STRICKLAND GOODALL

"A JUNIOR COLLEAGUE" writes: Dr. Strickland Goodall's early death must be largely due to the self-sacrificing devotion with which he worked unceasingly for the benefit of others. With all his being he gave of his best: to his profession, his patients, his colleagues, and to all and sundry, who never spared him in their anxiety to gain from him that help—for physical or mental

ills or ignorance—which was always so abundantly offered. His courage and indomitable will would not spare himself; his skill and knowledge (a generation in advance of his time), enthusiasm and sympathy made him continually and self-sacrificingly give all. We who have had the privilege of knowing him will always treasure a very blessed memory of this unassuming and most beloved physician. His contributions to medical knowledge are so well founded that they will stand the test of time. Doubtless there will also be raised some tangible memorial that shall spread farther and to future generations the benefits of his teaching.

We learn with great regret of the death, on December 5th, of Dr. EDWIN FITZGERALD O'CONNOR of Bessbrook, Co. Armagh. Born in 1889, the son of the Rev. D. Hamilton O'Connor, rector of Newbridge, Co. Kildare, he was an exhibitioner of Trinity College, Dublin, and graduated B.A. in 1910 and M.B., B.Ch., B.A.O. in 1912. As an undergraduate he played hockey for his university and for Ireland. After holding house appointments in Victoria Central Hospital and Wallasey Dispensary he joined the R.A.M.C. in 1914, served with distinction in Gallipoli and France, and was awarded the Croix de Guerre by the French Government. After demobilization in 1920, he commenced practice in Bessbrook, and some two years later was appointed medical officer to Daisy Hill Hospital, Newry. Here he found the opportunity for the practice of surgery, to which he brought a natural aptitude and skill combined with a sane enthusiasm. During his all too short tenure of this office he made the hospital a surgical centre for a large district, and gained to an extraordinary extent the confidence and trust not only of his colleagues, but of the general public. Dr. O'Connor was a member of Portadown and West Down Division of the British Medical Association, and a Fellow of the Ulster Medical Society. He was an enthusiastic Freemason, and dearly loved a day with the Newry Harriers. He married in 1915 Miss Evelyn Morris of Ruabon, Denbighshire, who has nursed him with courage and devotion during a long and painful illness bravely borne. There are three daughters and one son of the marriage.

We regret to announce the death, on November 25th, in his seventy-sixth year, of Dr. P. F. STURRIDGE of Chippenham, Wilts. Dr. Sturridge was born in Jamaica, and came to school in England at the age of 14 years. He received his medical education at Middlesex Hospital, and was a contemporary of the late Sir Henry Morris, Dr. Sidney Coupland, and Sir John Bland-Sutton. He obtained his M.R.C.S.Eng. in 1881 and his L.R.C.P.Ed. in 1882, and was Prosector to the Royal College of Surgeons and house-physician to the Middlesex Hospital. Starting in general practice in Kendal about 1884, he remained there for nearly forty years. He specialized in surgery and ophthalmic work, and was on the staff of the county hospital. A skilful and safe surgeon, he had to tackle everything that came along—sometimes in the most out-of-the-way places. His skill with cataract operations gained him the reputation of a miracle-worker in some of the isolated hamlets among the Westmorland fells. His only contribution to medical literature was a book on the eyesight of school children, and he used to predict that electric light would put the whole nation in spectacles. He was surgeon to the North-Western Railway, and a keen lecturer and examiner to the St. John Ambulance Association. He had been a member of the British Medical Association for twenty-six years, and was the first secretary of the Kendal Division, an office he held for eleven years. During the war he was surgeon to the local war hospital. After the war he returned to Sutton Benger, near Chippenham, with a small practice, and was soon the centre of the Church and social life of the village. On the death of his wife, three years ago, he gave up his home, and spent his winters in Jamaica and his summers in Yorkshire and London. He is survived by a married daughter in Yorkshire and a son practising in London.

The Royal Society of Medicine has suffered an irreparable loss by the death, in the Brompton Hospital, on December 4th, of its esteemed librarian, Mr. H. E. POWELL, after a trying illness which lasted many months. Mr. Powell was respected and loved in a degree which few persons in his profession attain. He was a learned man, and on every occasion unstintingly placed his personal knowledge at the disposal of all workers in the great library over which he presided with such efficiency, and by his example he materially raised the standard of medical bibliography in this country. He was a man of peculiar modesty and self-effacement, disliking intensely to be in the limelight, but devoting his whole energies to the perfection of his library and to the interests of the Royal Society of Medicine, of which he was such a loyal servant. I knew Powell for twenty-seven years, first as assistant in the library then as chief librarian, and I cannot recall an instance in which we differed, either on a question of policy or practice. I have known no one more affectionately spoken of nor one whose illness aroused such sympathy from the most highly placed members of the medical profession. His life was uneventful. Hubert Edward Powell was born at Twickenham in 1881, the son of a business man well known in that town. He went to school at Malden, and early showed the habits of the student and scholar. He entered the Royal Society of Medicine as an unpaid library pupil and gradually mastered the intricacies of the business under Sir John Y. W. MacAlister, whom he ultimately succeeded as librarian in 1920. In the course of years Powell acquired a very wide knowledge of practical medical librarianship, and his help was daily sought by, and daily given to, medical authors, inexperienced or learned. Powell was a born librarian, and had all the instinct for a successful career in his chosen work. Outside his medical work he was a wide reader of history, and he had an extensive and critical knowledge of the early British dramatists. His scholarship gained his election to the Fellowship of the Society of Antiquaries. Powell was also a mechanician, and spent his lonely bachelor evenings in the harmless pursuit of horology, until he became an expert in the construction of complicated watches and clocks. Powell was a fine character. He asked for nothing, he expected little, he gained much; and he will long be remembered in medical circles as an unselfish man who never turned a deaf ear to a request and one who attained to a high position in his profession.

WILLIAM BULLOCH,
Honorary Librarian, Royal Society of Medicine.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Faculty Board of Medicine has appointed Dr. G. S. Graham-Smith, Dr. A. N. Drury, and Mr. W. H. Bowen to be members of the M.D. Committee until September 30th, 1935.

UNIVERSITY OF LONDON

The following have been recognized as teachers of the University in the subjects indicated in parentheses:

University College: Dr. Archibald Durward and Mr. John Kirk (Anatomy).

St. Thomas's Hospital Medical School: Mr. Roland H. Boggon (Surgery).

London (R.F.H.) School of Medicine for Women: Mr. Claude W. Morris (Anaesthetics).

St. Mary's Hospital Medical School: Mr. Gerald L. M. McElligott (Venereal Diseases); Mr. William C. W. Nixon (Obstetrics and Gynaecology).

The degree of Ph.D. in pathology has been conferred on Mr. William A. Gray, F.R.C.S.

Professor W. Langdon Brown has been appointed governor of the Harpur Trust, Bedford.

At the celebration of Foundation Day, on November 22nd, the following degrees were conferred:

LL.D. (*honoris causa*).—Sir Edwin Cooper Perry.
D.Sc. (*honoris causa*).—Professor Karl Pearson, F.R.S.

CONFERENCE FOR MEDICAL OFFICERS IN INDUSTRY OVER-SEAS

It has been felt for some time that sufficient opportunity has not been given to medical officers in industry over-seas to exchange views on the various problems peculiar to their particular industries and to the areas where they are practising. It is proposed to hold at the London School of Hygiene and Tropical Medicine an annual conference, lasting for two days, in order that medical officers in industry on leave from the Tropics may be able to meet their colleagues and discuss their problems. The main subject for discussion will be the prevention of disease—for example, control of malaria and epidemic diseases in the Tropics ; water supplies ; sewage and refuse disposal ; housing ; the keeping of records ; and hygiene generally. It is considered that the contacts made at the annual conferences will not only be of value to medical officers attending, but will also establish contacts between these medical officers and the staff of the School. All medical officers practising on plantations, mines, railways, hydro-electric and construction schemes, and development companies generally will be welcomed. The conference each year will be held in July, and medical officers who would like to attend are invited to apply to the organizing secretary, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part I, including Forensic Medicine and Toxicology :* Monica Hawkins, *B. Isserlin, J. S. W. Little, †N. R. Matheson, E. Philipp, L. A. Schnipelsky, E. Want, E. L. Ward. *Part II :* ‡Marion L. Tryon, R. D. Bodman, J. N. Heales, F. J. W. Lewis, A. J. Matheson, Mary G. Thomas. *Group I only :* H. James.

M.D.—J. C. Batt.

* Distinction in pathology.

† Distinction in materia medica, pharmacy, pharmacology, therapeutics, and forensic medicine and toxicology.

‡ Second-class honours.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

FINAL MEDICAL EXAMINATION, PART II.—*(Medicine) :* *H. D. O'Brien D. J. Bradley, Doris E. Morton, T. D. O'C. Donelan, C. J. Vaughan, H. M. Glover, H. A. Wells, J. Sorett, P. O'Brien, R. I. Shier, A. R. S. Jessop, F. J. B. Convery. *(Old Regulations) :* C. O. Greer, H. S. J. van Niekerk. *(Surgery) :* *H. D. O'Brien, Doris E. Morton, Mary E. Mansfield, Marie J. S. O'Toole, A. C. Pilkington, H. A. Wells, I. A. Walsh, Sheila K. Henderson, H. S. J. van Niekerk, J. F. Q. Conolly, T. D. O'C. Donelan, A. R. S. Jessop, J. F. Harbinson, P. O'Brien, C. O. Greer, D. J. O'Shaughnessy, S. M. Freedman. *(Midwifery) :* J. N. P. Moore, J. T. Wellwood, M. Marmelstein, D. G. Walker, J. C. Gaffney, R. H. Pratt, J. R. Shapiro, L. W. M'Caughey, J. R. M'Elroy, D. P. Burkitt, H. C. Bourke, R. L. Oakes, F. J. C. Loughran, R. C. O'Grady, G. W. M. Elliott, H. Pringle, E. S. Dorman, J. R. Kellett, Muriel E. Wallace, Maureen C. E. Gore-Grimes, R. A. Bond, P. X. O'Dwyer.

M.CH.—J. E. Ellison.

* Passed on high marks.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the monthly meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on December 3rd, the following were admitted Fellows of the Faculty: John Glaister, M.D., Farquhar Gracie, M.B., C.M., David Lamb, M.B., C.M., William Thompson Wotherspoon Paxton, M.B., Ch.B., Horace Minton Shelley, M.R.C.S., L.R.C.P., D.T.M. and H., Hans Stubbe, M.B., B.S.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At the monthly meeting, on December 7th, the following were admitted as Licentiates in Medicine and Midwifery of the College under the conjoint scheme with the Royal College of Surgeons in Ireland: G. F. Adye-Curran, J. H. Armstrong, Margaret Corbett, E. J. Crowe, A. J. Crummie, P. B. Cusack, P. O'D. Gallagher, N. B. May, J. C. McFeely, Margaret O'Connor, J. O'Leary, J. F. Sutcliffe.

The Captain Massy-Miles Prize, 1934, was not awarded, as there was no candidate eligible for such award.

The representative of the College on the General Medical Council reported on the recent proceedings of the Council.

The representative of the College on the Medical Registration Council of Saorstát Eireann reported on the recent proceedings of that Council.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The report of the Joint Select Committee on the Government of India was debated this week in both Houses of Parliament. In the House of Lords the Registration and Regulation of Osteopaths Bill was read a second time after a debate reported below.

In the House of Lords on December 5th Lord Merrivale presented the Matrimonial Causes (Procedure in Suits for Nullity) Bill and the Matrimonial Causes Amended Procedure Bill, which were read a first time. Lord Sankey, the Lord Chancellor, presented a Supreme Court of Judicature (Amendment) Bill, one of the objects of which is to provide for the hearing *in camera* of certain evidence in nullity cases.

Regulations for the relief of able-bodied unemployed who are not entitled to unemployment insurance benefit under the Unemployment Act, and for their families were laid on the table and will be debated by the House of Commons next week. These regulations provide for exemption or partial exemption of sick pay, national health insurance benefit, maternity benefit, or wound and disability pensions as laid down by the Act. The allowances for children are graded according to the age of the child.

A Bill to confirm a Provisional Order relating to the Guisborough Joint Small-Pox Hospital District was read a first time in the House of Commons on December 11th.

On December 10th, in the House of Commons, Sir John Gilmour introduced the Metropolitan Police (Borrowing Powers) Bill. The measure extends the power of the Receiver for the metropolitan police district with respect to the borrowing of money for the provision of better accommodation for the metropolitan police force.

Registration of Osteopaths Bill

In the House of Lords, on December 11th, Viscount ELIBANK moved the second reading of the Registration and Regulation of Osteopaths Bill. The Bill, he said, was to secure the compilation of a register of osteopaths and to regulate the practice of this new system of therapeutics in this country. It also sought to impose on the practitioners of the system a prescribed standard of professional training and competence. Medical law as it now stood impeded the development of an independent system for the treatment of disease, such as osteopathy claimed to be. The prime object of the Bill was to remove the disabilities which attended the work of genuine osteopaths. Under the Bill a statutory board would be set up which would keep a register of qualified osteopaths and would supervise admission to the register. The Board would have power to prescribe a course of study which would qualify for the practice of osteopathy. The Bill contained nothing that would enable an osteopath to gain admission to the medical profession, and osteopaths did not ask to be admitted to the profession. They asked to be admitted to an osteopaths' register, and that only qualified osteopaths should be registered. He urged that the Bill should be read a second time and sent to a Select Committee.

The Medical Act and the Bill

Lord MOYNIHAN, in moving the rejection of the Bill, said that it involved the negation of all the principles embodied in the Act of 1858. That Act enabled every person to discriminate between those who had and those who had not passed through the medical curriculum, between the qualified and the unqualified practitioner. It received its inspiration from a desire for the protection of the public against certain dangerous people who had undergone no medical training in those fundamental sciences on which medicine was for ever based. The Bill would set aside all the defences erected for the protection of the public, and which had been shown to be necessary. If one particular theory of medicine were guaranteed recognition contrary to the Act of 1858 it would

not be long before other cults made appeals for recognition. If osteopaths were at last recognizing that a formal medical training was essential before they might successfully practise their art, there was nothing to prevent them from passing through the present medical curriculum. The Bill embodied an endeavour to destroy the unity of medicine and to force on the public, which was unaware of the danger, a spurious science which set aside the accumulated wisdom and expert practice of centuries. The Bill sought legislative authority for a theory of medicine which had in no country proved its validity.

Lord GAINFORD and Lord ERNLE supported the Bill, the latter remarking that at present any qualified medical practitioner who associated himself with an osteopath was placed under a ban. The Royal College of Physicians, therefore, stamped the osteopath as a quack or a charlatan almost indiscriminately.

A Question of Principle

Lord DAWSON OF PENN pointed out that the Bill raised an important question of principle. There were certain callings for which, by long custom or statute, a certain prescribed course of training was laid down. He would take three: the law, the master mariner, and medicine. The first course of training was preparatory and preliminary, for the purpose of securing that people entering those callings should have adequately trained minds before they were vocationally educated. Supposing a body of people said that it wanted to train persons for the Bar, and do it in its own way, without reference to the existing system, or another body said it had a suitable way of training captains of Atlantic liners, and asked for the same status as was given by the Board of Trade certificate, what would be the answer? He thought it would be an emphatic negative; and why should there be any difference in the case of medicine, which had a grave responsibility for human life? In the medical profession there was complete liberty of thought. Many doctors who had been trained for the medical profession practised osteopathy, and did so successfully. What the medical profession said was, that the osteopaths must go through the medical training, and then they would be free to do what they liked. There must be the background of preliminary, non-vocational training to make the trained mind, and it was only when the medical schools were satisfied with the basic training of the student that the latter were permitted to enter on the vocational part. During five years the medical student had to live laborious days, and the majority required further training afterwards. Diagnosis was the keystone of the arch of a medical training. There could be no giving way on the essential point, that knowledge of diagnosis must precede the power to direct and guide treatment. The Bill would merely give a short cut to people who wanted to acquire, through its provisions, the status of doctors. If that kind of training were to be allowed to displace the scientific training, which could only be built up by years of experience, if any short cut or backdoor entrance were allowed, the whole fabric of the efficiency of the healing art would be brought down from the level to which it had taken years to build up. Doctors were prepared to treat osteopaths as co-workers, but not to give them equality of status in the science of medicine, for which they had not had a proper training. For osteopathy to have the status of medicine without the training in pathology would be a public danger. Good as osteopathy was in the proper direction, it could be a perfect terror and a tragedy, as he himself knew. Manipulative treatment had a valuable place, but if an osteopath, as this Bill suggested, assumed the status of the highly trained doctor it would be very much against the public interest.

Lord AMPTHILL said that Lord Moynihan had used language of exaggeration such as had never been heard in that House before. Midwives, dentists, and others had been registered, and no irreparable calamity had resulted. Lord MOYNIHAN replied that they had no objection to registration. Lord AMPTHILL said that Lord Moynihan had been objecting all the time. The medical profession was the most jealous trade union in the world, and the General Medical Council had obstructed, resisted, and derided a great many advances in medical science. Lord Moynihan would have them believe that medical science to-day depended on some immutable principles laid down with all the force of a divine law. Every year, however, they heard of new practices which were at first objected to by some medical men, but afterwards adopted. He hoped the House would not put itself into the false position of refusing to this profession the necessary protection, and also the necessary measure of protection to the public.

Issue of Death Certificates

Lord HEWART said that the Bill would allow an osteopath to issue death certificates. As a lawyer he was staggered by that proposal. The Bill went far beyond what any reasonable osteopath should properly desire.

Viscount GAGE, replying to the debate, suggested that they should compare the position of the ordinary member of the public to-day with what it would be under the Bill. There was nothing to-day to prevent an osteopath from treating a patient and receiving a fee for doing so. A patient might have a complaint with which an osteopath was specially competent to deal, but if he had something more deep-seated the osteopath might have no qualifications for diagnosing that. If the Bill became law the patient would be protected from the absolutely ignorant practitioner, but his complaint would still be diagnosed by somebody who possessed a good deal less than the minimum qualifications at present. That would be done under the blessing of the Ministry of Health, and if things went wrong the patient would have some grievance against the Ministry. What justification would the Ministry of Health have for putting the public in the dilemma of having to decide between two rival schools of medicine? If the House agreed to this Bill it would be countenancing the treatment of persons by partially qualified doctors.

The second reading was carried by 35 votes to 20, and the Bill was referred to a Select Committee, with full powers to call witnesses.

Health Conditions in Grenada

Replying to Mr. William John, on December 5th, Sir PHILIP CUNLIFFE-LISTER said health conditions in Grenada were, generally speaking, satisfactory. The latest reports available showed that the death rate of 13.8 per 1,000 in 1932 was the lowest on record. As regards tuberculosis, thirty-six new cases were notified in that year and forty-six deaths. The erection of a new and improved tuberculosis hospital was recommended recently by a medical commission appointed to report to the Governor of the Windward Islands on the medical services there. Sir Philip could trace no information concerning any malnutrition in the schools. As a result of school inspection 85 per cent. of the children were considered to be healthy. A Government grant of £100 to the Maternity and Child Welfare League in Grenada was deleted from the Grenada Estimates in 1933 owing to financial stringency, but in 1934 this grant, some portion of which was understood to be applied to milk distribution, was substantially restored. In accordance with the recommendations of the 1932 Poor Relief Commission, the poor asylum buildings were enlarged, a casual ward was provided in the vicinity of the Government hospital, and the nurses' quarters at the asylum and its sanitary arrangements had been improved. His approval was being given to the adoption, as from January 1st, 1935, of a simplified and more expeditious procedure for the granting of poor relief. In housing conditions there was still room for improvement.

Food and Health

Dr. J. B. ORR, director of the Rowett Institute, Aberdeen, addressed the Health and Housing Committee, at the House of Commons on December 5th, on human nutrition. Sir FRANCIS FREMANTLE took the chair. Dr. Orr said many believed that the full application of recently acquired knowledge of the effect of food on health would lead to a reduction in disease and an improvement in health and physique. Application of this new knowledge was hampered by the present world-wide unemployment and reduced purchasing power. As the latter fell total consumption decreased, and consumption moved to cheaper foodstuffs such as sugar, bread, and margarine, which satisfied hunger but were not adequate for health. There was evidence that malnutrition tended to increase in all large industrial countries, and measures were being taken to combat it. The United Kingdom had intensified measures to ensure that poverty due to unemployment did not result in deterioration of health. The number of children getting free meals at

school increased from 192,000 in 1928 to 399,000 in 1933. About three million children now took advantage of the scheme for cheap milk in schools. It was probable that further measures might be found necessary, especially in the depressed areas. Apart from the immediate economic depression there remained a long-range problem of how this new knowledge of nutrition was to be applied for the raising of the standard of health. Information was needed on the extent to which malnutrition existed, the extent to which it was due to inadequate diet, and the extent to which inadequate diet was due to poverty. If reliable information on these points were available it would be possible to evolve a national policy which would make for orderly progress, irrespective of whatever Government might be in power.

Several medical M.P.s joined in the subsequent discussion.

Maternity and Child Welfare

On December 5th Miss CAZALET asked the number of ante-natal clinics and the average attendance at each in Dewsbury, Rochdale, Huddersfield, Blackburn, Poplar, Putney, Wandsworth, Shoreditch, West Ham, and the Welsh counties, and the amount of hospital accommodation for maternity in each of these districts. Mr. SHAKESPEARE, in reply, furnished the following tabular statement relating to the year 1933. He explained that the figures did not include ante-natal clinics or maternity accommodation at voluntary institutions not subsidized by the local authority.

Local Authority	Number of Ante-natal Clinics	Average Number of Women per Clinic who Attended	Average Number of Attendances per Clinic	Number of Beds Provided at Maternity Hospitals and Homes
Dewsbury	2	242	623	13
Rochdale	1	546	2,468	51
Huddersfield ..	2	340	1,409	28
Blackburn	1	737	2,558	51
Poplar	4	282	964	35†
Wandsworth* ...	9	54	140	20
Shoreditch	3	182	527	15†
West Ham	9	2,131	5,718	141
Anglesey	—	—	—	2
Brecknockshire ...	—	—	—	7
Carnarvonshire ...	—	—	—	13
Cardiganshire ...	—	—	—	10
Carmarthenshire ...	1	67	238	6
Denbighshire ...	2	47	127	11
Flintshire	6	134	423	16
Glamorganshire ...	35	76	198	58
Merionethshire ...	—	—	—	5
Monmouthshire ...	16	85	175	19
Montgomeryshire ...	—	—	—	18
Pembrokeshire ...	—	—	—	9
Radnorshire... ...	—	—	—	3

*Separate figures for Putney (which is included in the metropolitan borough of Wandsworth) are not available.
†These beds are in hospitals provided by the London County Council.

In reply to Mrs. WARD, who asked, on December 5th, for figures of maternal mortality in the administrative areas of Cannock and Brownhills urban districts, and how the position compared with five years ago, Mr. SHAKESPEARE circulated the following:

	1928		1933	
	Deaths	Rate per 1,000 Live and Still Births	Deaths	Rate per 1,000 Live and Still Births
Cannock U.D. ...	3	3.73	2	3.08
Brownhills U.D. ...	2	4.90	1	2.98

Royal Commission on Durham University

The Royal Commission set up to inquire into Durham University and its constituent colleges is drafting its report, which it hopes to present early next year. This information was given to Mr. T. B. Martin by Mr. RAMSAY MACDONALD on December 6th.

Depressed Areas Bill

In committee of the House of Commons, on December 5th, to consider the money resolution attached to the Depressed Areas Bill, Dr. O'DONOVAN remarked that the migration of substantial numbers from these depressed areas, either voluntarily or by compulsion, gave rise to a biological problem. It affected the nerves, habits, and health of numbers who had been used to one environment. That matter should be considered closely.

The financial resolution passed through committee, and subsequently through the report stage. The committee stage of the Bill was begun by the House on December 6th, when Dr. ADDISON asked for a more exact definition of the relation between local authorities and the commissioners under the Bill. The committee stage was resumed on December 8th, when Dr. ADDISON pointed out that water supplies, drainage, and housing would be excluded from the activities of the commissioners. The report and third reading of the Bill were set down for December 13th.

Water Survey

Sir HILTON YOUNG announced in the House of Commons on December 7th that, after consultation with the Department of Scientific and Industrial Research and other Departments concerned and with their co-operation, Sir Godfrey Collins and he had decided that a comprehensive inland water survey should be undertaken for Great Britain. The information required would be obtained by the Departments from water undertakers, catchment boards, and other qualified bodies and persons. In cases where records were desirable but not now kept, measures would be undertaken to encourage the keeping of the necessary records. A water survey committee, composed of persons outside Government Departments, would be appointed to advise on the survey and on the progress of measures undertaken. In the constitution of the committee attention would be paid to the inclusion of both scientific and practical experience. It would be open to this committee to make recommendations on any further measures which it considered necessary for the purposes of the survey. He hoped to announce shortly the members of the committee.

Hospital Treatment in Workmen's Compensation Cases

Captain CROOKSHANK, on December 10th, informed Mr. Tinker that the Home Secretary was not aware of any increase in the number of cases that were taken to hospitals for treatment after accidents which came under the Workmen's Compensation Act. Proposals were considered some years ago, in correspondence with the British Hospitals Association, for requiring employers to pay for the cost of hospital treatment in workmen's compensation cases. On examination, however, it appeared that they would involve great practical difficulties, and that there were other considerations to be taken into account, including the possible effect on employers' voluntary subscriptions to the hospitals. The Home Secretary did not think that this question could usefully be taken up again except in connexion with a general review of the Acts.

Control of Infection by Aircraft in Sudan

Sir PHILIP CUNLIFFE-LISTER, replying to Sir Robert Hamilton, said he had received official information of a case of yellow fever that occurred in the Bahr-el-Ghazal Province of the Sudan in June last. Measures in excess of those obligatory under the International Sanitary Convention for aerial navigation were taken by the Government of the Anglo-Egyptian Sudan in co-operation with the Government of Uganda to stop the spread of infection to neighbouring territories. Aerial navigation from any aerodrome in the Bahr-el-Ghazal Province to such territories was prohibited, and aerodromes in the

Province were closed to all civil aircraft flying within the Sudan. Juba and Malakal were made and declared anti-amaryl aerodromes, although there was no reason to believe that yellow fever existed in these districts. The sanitary staff at Wau in the Bahr-el-Ghazal Province was increased in order that every effort should be made to eliminate the mosquito vector. On arrival at any aerodrome in Mongalla Province aircraft were subjected to the measures prescribed under Article 47 of the International Sanitary Convention for aerial navigation. At the request of the Government of Uganda the Sudan Government agreed to subject all aircraft on departure from Juba to the measures prescribed under Article 43 of the Convention. No further special measures of protection on the part of the Governments of the East African territories under the control of the Colonial Office appeared to be necessary.

Conscientious Objections to Vaccination.—Mr. RALPH BEAUMONT asked Sir Hilton Young, on December 4th, the number of cases in which conscientious objection to vaccination of infants had taken place in each of the last ten years, and what percentage these figures bore to the birth rate in each of those years. Sir HILTON YOUNG gave particulars as follows:

	Number of Conscientious Objections	Percentage of Births Registered
1923	280,252	37.0
1924	271,176	37.2
1925	292,417	41.2
1926	284,122	40.9
1927	266,668	40.8
1928	280,815	42.5
1929	287,753	44.7
1930	285,792	45.6
1931	294,595	46.6
1932	291,015	47.4

Medical Services at Mexborough, Yorks.—Replying to Mr. Paling, on December 6th, Sir HILTON YOUNG said he had no information that the Montague Hospital, Mexborough, Yorkshire, had recently erected two medical wards by aid of grants from the Miners' Welfare Fund, but that these were not opened owing to the reduction of income through unemployment and bad trade in the five urban districts served by this hospital, or that, as Mr. Paling asserted, there were no medical wards at the present time and no adequate medical service. His sanction would not be required for the payment by the urban authorities, under the Public Health Act, of the product of a 1d. rate to provide a portion of the revenue required for opening the wards.

Medical News

The House of the British Medical Association, including the Library, will be closed for the Christmas holidays from 1 p.m. on Saturday, December 22nd, until 9 a.m. on Thursday, December 27th.

The House and Library of the Royal Society of Medicine will be closed from Saturday, December 22nd, to Thursday, December 27th, both days inclusive.

Sir Comyns Berkeley will open the extension of the Willesden Maternity Hospital at Honeypot Lane, Kingsbury, N.W.8, on Saturday, December 29th, at 3 p.m., with the mayor of the borough in the chair.

The next meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, December 19th, at 5.30 p.m., when a paper will be read by Dr. John R. Baker, and Mr. J. H. Chivers will exhibit and describe some new types of Zeiss microscopical apparatus. Professor W. A. F. Balfour-Browne will deliver his presidential address before the Society on Wednesday, January 16th, 1935.

A joint meeting of the London Section and the Food Group of the Society of Chemical Industry will be held at Burlington House, Piccadilly, W., on Monday, January 7th, 1935, at 8 p.m., when Professor T. P. Hilditch will deliver the Jubilee Memorial Lecture on "The Fats: New Lines in an Old Chapter of Organic Chemistry."

Colonel Mervyn O'Gorman will read a short paper before the British Science Guild on "Bringing Science into the Road Traffic Problem," at the Royal Society of Arts, John Street, Adelphi, W.C., on Wednesday, December 19th, at 5 p.m. A discussion will follow. Admission tickets (for which there is no charge) are obtainable from the Guild at 6, John Street.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that a lecture-demonstration will be given at 11, Chandos Street, W., on December 18th, at 2.30 p.m. Further lecture-demonstrations, on general medicine, will be given on Fridays, at 4.30 p.m., beginning on January 11th. A series of pathological demonstrations, beginning on January 17th, will take place on Thursdays, at 3 p.m., at the Wellcome Museum of Medical Science. Clinical demonstrations will be given in 1935 on the second Saturday afternoon of each month, commencing on January 12th, at 3 p.m., at the National Hospital, Queen Square, W.C. A special series of surgical tutorial classes will be given on Tuesdays and Thursdays, at 8 p.m., at the National Temperance Hospital, beginning on January 15th. Other courses in the New Year include: cardiology, at the National Heart Hospital, January 14th to 26th; urology, at St. Peter's Hospital, January 21st to February 2nd; a week-end course on diseases of the heart and lungs, at the Royal Chest Hospital, on January 19th and 20th; and a course in manipulative surgery, at 11, Chandos Street, on four successive afternoons, at 5.15 p.m., from January 29th. Full details of all courses, etc., which, with the exception of the cardiology course, are open only to members and associates of the Fellowship, will be available shortly.

H.R.H. The Princess Royal paid a visit to the new Poole Sanatorium at Middlesbrough on December 6th. The sanatorium, which was presented to the borough by Colonel and Mrs. Gibson Poole, and was formally opened in June, 1932, has accommodation at present for thirty male adult patients and fifteen children. Under an extension scheme, it is proposed to make it the nucleus of a much larger institution, comprising 335 beds for the treatment of early and curable cases of tuberculosis from other North-East Coast local authorities. It is estimated that the extensions will cost £145,000.

The Minister of Health has approved the appointment of Dr. Thomas Williams Wade as medical member of the Welsh Board of Health, in succession to Dr. D. Llewelyn Williams, who retires from the public service on February 3rd, 1935, on attaining the age of 65. Dr. Wade has been employed as medical officer on the staff of the Welsh Board of Health since January, 1921.

The fifteenth annual dinner of the 14th Stationary Hospital was held on December 7th at the Trocadero Restaurant, with Colonel C. R. Evans, D.S.O., in the chair. The occasion was rendered unusually interesting by the number of reminiscences from various speakers relating to outstanding events in the hospital's history. It was very gratifying to find such a good attendance after so many years, and Colonel H. M. J. Perry, O.B.E., proposed a warm vote of thanks to Major H. L. Tidy for his organizing work, which had proved so consistently successful.

The issue of *Revue Médicale Française* for November is devoted to cancer.

The *Revue Sud-Américaine de Médecine et de Chirurgie*, published by Masson et Cie, Paris, will cease to appear at the end of 1934.

The second centenary of the Spanish National Academy of Medicine, founded in September, 1734, was celebrated in Madrid from December 10th to 15th.

We regret to learn as we go to press of the death of Dr. Theobald Smith, president of the Board of the Rockefeller Institute of Medical Research, whose original researches on diseases of animals and man were recognized by the Copley medal of the Royal Society and the Manson medal of the Royal Society of Tropical Medicine and Hygiene.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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QUERIES AND ANSWERS

Chemistry of Fehling's Reaction

Dr. J. M. MACPHAIL (Middlesbrough) writes: Can anyone suggest what is the nature of the reducing agent or agents found so often in the urine when equal quantities of urine and Fehling's solution are boiled together? It would seem that under normal conditions this mixture when boiled remains blue, and we know that as sugar gradually disappears from the urine a green reaction appears; but what is this green reaction that is present when no trace of sugar has ever been found in the urine? It is also found with urates and phosphates. Certain signs would suggest that its presence indicates severe disturbance of liver function, as it is found very often as a "pea-soupy" green with sediment twenty-four hours or more after a long anaesthesia and severe operation. In a few days this green becomes a grass green, but it may be three to four weeks before the "normal" blue of health returns. This green colour is also found when the liver is involved in chronic heart disease with dropsy and liver engorgement; in chronic alcoholism; in "chronic debility"; in cancers, etc. The only trouble seems to be that it is found too easily to be of definite distinguishing value. If it shows a defect in liver function, what are the reducing agents that get green into the urine? and is it not possible to evolve a liver test that may be put to the proof by a fairly ordinary analysis of the urine?

Aerophagy and Meteorism

Dr. LEONARD WILLIAMS (London, S.W.1), in reply to "Perplexed" (*Journal*, November 3rd, p. 843), wonders whether this really is a case of aerophagy, whether in fact the air has really been swallowed, or whether, as seems more probable, a portion of intestine, say, ascending and transverse colon, becomes atonically dilated owing to nervous influence or fatigue, and is promptly invaded by gas from the surrounding tissues. He writes: Surgeons have known flaccid stomachs and large intestines to balloon suddenly during an operation. And, seeing that Epsom salts and other drugs are known to withdraw fluid from the intestinal canal, there is surely nothing to prevent air from being withdrawn by the same route. If this patient's flatulence were really due to swallowed air it is unlikely that there would be a complaint of meteorism, because the gas in such cases seldom goes below the stomach; very often, indeed, it goes no further than the cardiac end of the oesophagus, and the complaint is of cardiac distress, because the wind cannot be eructated. The meteorism in this patient would probably be quickly relieved by oil of cajuput, and, as there is usually an element of spasm somewhere, belladonna ought to be useful.

Income Tax

Cessation of Employment Earnings

"E. M." was an unestablished medical officer under the L.C.C. On May 4th the earnings ceased, owing to a serious street accident. The original notice of assessment was based on the previous year's figures, but an amended statement was rendered, when the facts were explained. Now, however, a demand for payment of tax on the original figures has been received.

*** It looks as if there was some lack of co-operation between the office of the inspector who amended the assessment and the collector whose duty it is to collect the tax. Probably the best thing to do is to send the collector's demand to the inspector's office, pointing out that it does not agree with the amended statement.

LETTERS, NOTES, ETC.

Psychology and Religion

Dr. A. J. BROCK (North Queensferry, Fife) writes: I have read in your issue of November 24th an abbreviated report of an address given by Dr. David Forsyth on psychology and religion. It is difficult, owing to the conciseness of the report, to be quite sure of his point of view, but he appears to class religion as belonging to "pleasure-thinking," and therefore to something hardly desirable. He tells us that a large part of the human energy "available for social enterprise" is at present "running to waste in the interests of religion," and this he wants diverted for the purposes of science, otherwise of "objective truth," which "best serves in subduing the forces of nature in the interests of the individual." Personally, while I agree that the main object of our psychical powers is to forward social enterprise and to help the individual, I think at the same time that Dr. Forsyth is a little too hard on religion. Will he, for example, answer me one or two things? He suggests that a child's idea of God is derived from its experience of its own father. But what happens if the child has never seen its father, or if the father is not very awe-inspiring—is, for example, a hen-pecked individual? And another question. How does Dr. Forsyth explain the common and almost instinctive belief of all children in fairies? Do these not correspond to anything in "reality," or are they perhaps only the child's brothers and sisters? Next, about the soul. According to your report of Dr. Forsyth's address, psychology "had observed that the idea [of soul] arose from the implicit belief of savages in the reality of their dreams." Well, now, will Dr. Forsyth tell me what he makes of the expression often heard in these days of bureaucracy and of mechanism in general, and from people who are not by any means savages, that they "cannot call their souls their own." Dr. Forsyth is anxious to advance the cause of the individual. So I put it to him: What is the use of individuals who have no individuality? Does he tell me there is no such thing as individuality, and that, like the soul, it is only the figment of a savage's dream? On the contrary, I suggest that one's soul or individuality is the most important thing about one. At the same time, it is certainly not recognized or recognizable by "science," whose sphere is nothing more than "objective truth." If I am right, then Dr. Forsyth, in his zeal for social enterprise and for the welfare of the individual, will have to pay more attention to a lot of what is often classed as "religion," and which he tends too airily to dismiss with abusive terms drawn from the armamentarium of current psychology, such as "masochism" and "sadism."

Diaries and Calendars

We have received from Messrs. John Walker and Co. (Farringdon House, Warwick Lane, E.C.4) a selection of diaries, calendars, and appointment books for 1935, many of which would be of service to busy medical men. The diaries are attractively bound, and are obtainable at a variety of prices from 1s. 9d.

Special Plate: Correction

We much regret that, owing to an unfortunate error at the engravers, the three radiographs illustrating the article "Mediastinal and Apical Empyema," by Dr. S. J. Hartfall and Mr. L. N. Pyrah, were reproduced in the wrong order on the special photogravure plate which appeared on December 8th. An examination of the reproductions, with their accompanying legends, shows that the photograph labelled Fig. 2 is really Fig. 1, that labelled Fig. 3 is really Fig. 2, while the one appearing as Fig. 1 should actually be Fig. 3.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 43, 44, 45, 46, 47, and 49 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48 and 49.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *300*.